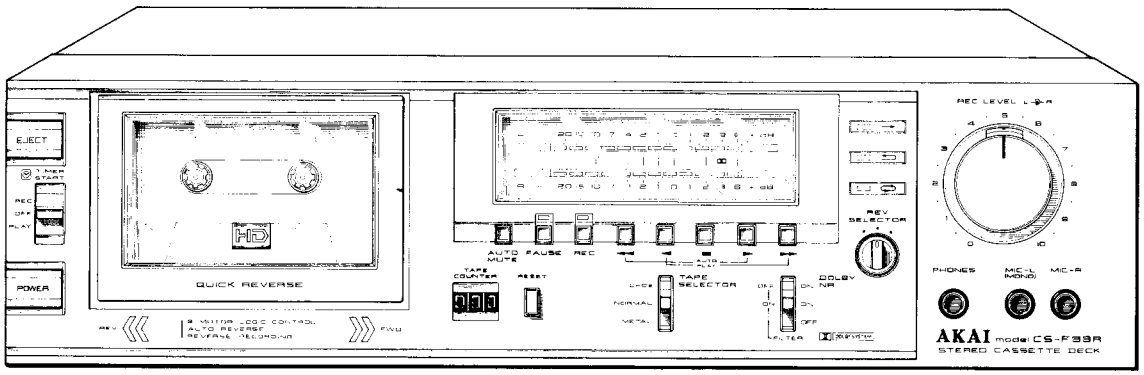
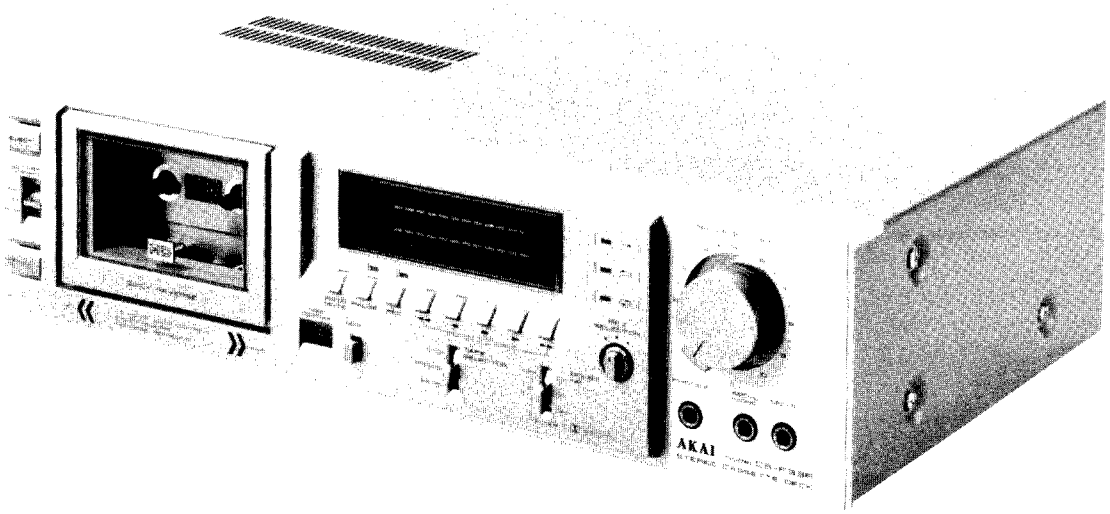
AKAI SERVICE MANUAL



CS -F33R

STEREO CASSETTE DECK

MODEL CS-F33R



STEREO CASSETTE DECK

MODEL CS-F33R

THIS MANUAL IS APPLICABLE TO BOTH SILVER AND BLACK PANEL MODELS.

TABLE OF CONTENTS

SECTION 1 SERVICE MANUAL 3
SECTION 2 PARTS LIST 23
SECTION 3 SCHEMATIC DIAGRAM 38

SECTION 1

SERVICE MANUAL

TABLE OF CONTENTS

I. **TECHNICAL DATA** **4**
II. **DISMANTLING OF UNIT** **5**
III. **CONTROLS** **6**
IV. **PRINCIPAL PARTS LOCATION** **7**
V. **VOLTAGE AND CYCLE CONVERSION** **8**
1. VOLTAGE CONVERSION 8
2. CYCLE CONVERSION 8
VI. **MECHANICAL ADJUSTMENT** **9**
1. FLYWHEEL LOOSE PLAY ADJUSTMENT 9
2. PLUNGER POSITION ADJUSTMENT 10
3. PINCH ROLLER PRESSURE MEASUREMENT 10
4. WINDING TORQUE MEASUREMENT IN EACH MODE 10
5. TAPE SPEED ADJUSTMENT 10
VII. **HEAD ADJUSTMENT** **11**
1. ERASE HEAD HEIGHT ADJUSTMENT 11
2. TAPE GUIDE HEIGHT ADJUSTMENT 11
3. REC/PB HEAD HEIGHT ADJUSTMENT 11
4. REC/PB HEAD AZIMUTH ADJUSTMENT 11
VIII. **ELECTRICAL ADJUSTMENT** **12**
1. QUICK REVERSE SENSITIVITY ADJUSTMENT 12
2. AMPLIFIER ADJUSTMENT 12
IX. **DC RESISTANCE OF VARIOUS COILS** **14**
X. **CLASSIFICATION OF VARIOUS P.C BOARDS** **14**
1. P.C BOARD TITLES AND INDENTIFICATION NUMBERS 14
2. COMPOSITION OF VARIOUS P.C BOARDS 15

For basic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

I. TECHNICAL DATA

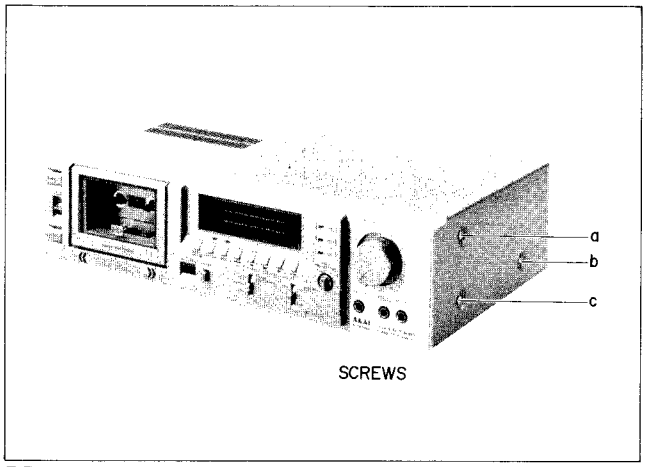
Track System	4 Track 2 Channel Stereo System
Tape	Philips Type Cassette
Tape Speed	4.76 cm/s±1.0% (1-7/8 ips.±1.0%)
Heads	Erase head × 2 High Density Metallic head for recording/playback × 1
Motors	Electronically speed controlled DC motor for capstan drive × 1 DC motor for reel drive × 1
Wow and Flutter	Less than 0.04% WRMS, 0.12% (DIN 45500)
Tape Winding Time	80 sec. using a C-60 cassette tape
Frequency Response	Normal: 30 to 16,000 Hz±3 dB CrO_2: 30 to 16,500 Hz±3 dB (−20 VU) 30 to 8,500 Hz±3 dB (0 VU) Metal: 30 to 18,000 Hz±3 dB (−20 VU) 30 to 12,500 Hz±3 dB (0 VU)
Signal to Noise Ratio	Normal: Better than 58 dB CrO_2: Better than 60 dB Metal: Better than 60 dB (measured via tape with peak recording level) Dolby NR switch ON: Improves up to 10 dB above 5 kHz
Harmonic Distortion	Normal: Less than 0.8% CrO_2: Less than 0.7% Metal: Less than 0.7%
Input	MIC: 0.25 mV (input impedance 5.0 kohms) Required microphone impedance: 600 ohms Line: 70 mV (input impedance 47 kohms)
Output	Line: 410 mV at 0 VU Required load impedance: more than 20 kohms Phone: 50mV/8 ohms at 0 VU
DIN	Input: 2 mV (Input impedance 10 kohms) Output: 410 mV Required load impedance: more than 20 kohms
Power Requirements	100V, 50/60 Hz for Japan 120V, 60 Hz for USA and Canada 220V, 50 Hz for Europe except UK 240V, 50 Hz for UK and Australia 110V/120V/220V/240V, 50/60 Hz internally switchable for other countries
Power Consumption	U/T, JPN, AAL, CAS 20W
Dimensions	440 (W) × 118 (H) × 270 (D) mm (17.3 × 4.6 × 10.6")
Weight	7.5 kg (16.5 lbs)

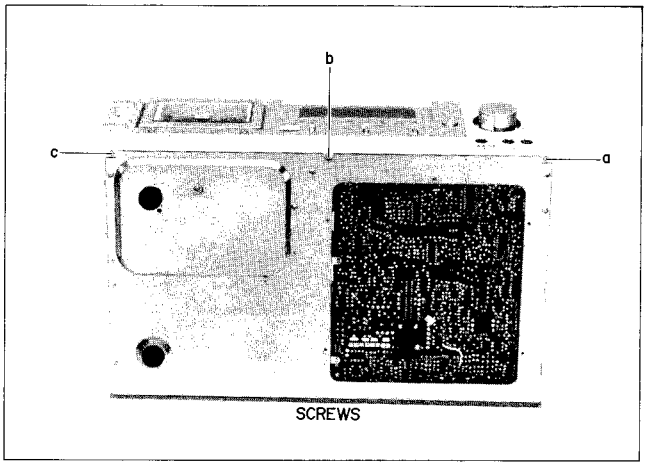
*** For improvement purposes, specifications and design are subject to change without notice.**

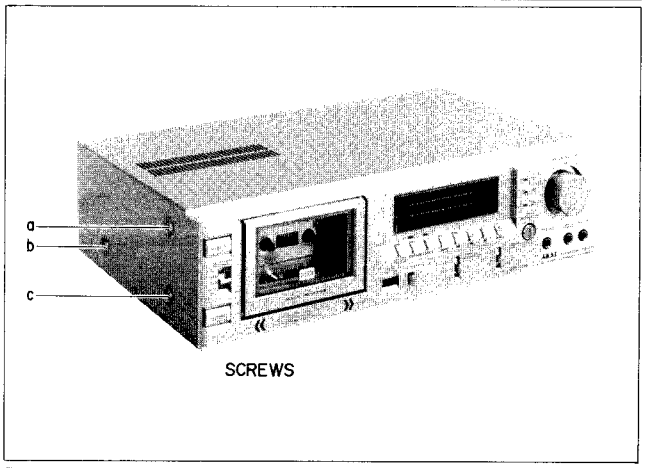
*** "Dolby" and the Double D symbol are trademarks of Dolby Laboratories. (Manufactured under license from Dolby Laboratories).**

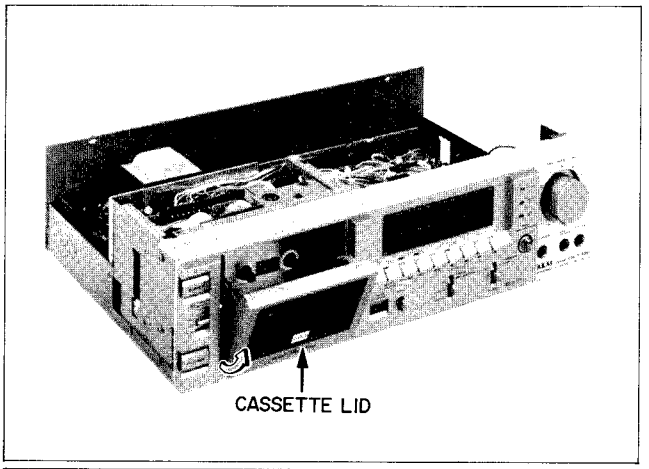
II. DISMANTLING OF UNIT

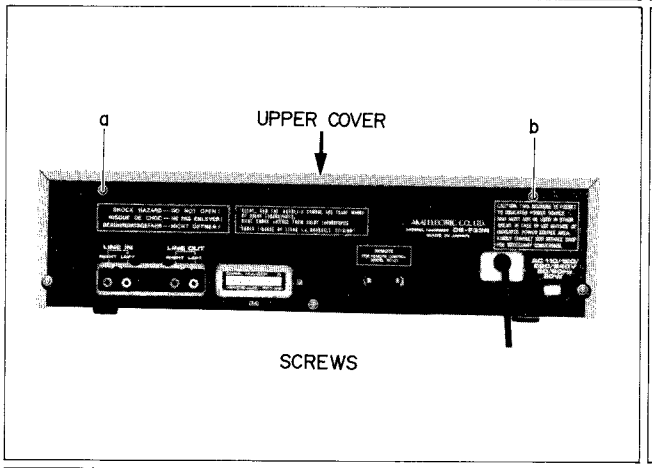
In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the photographs.
Reassemble in reverse order.

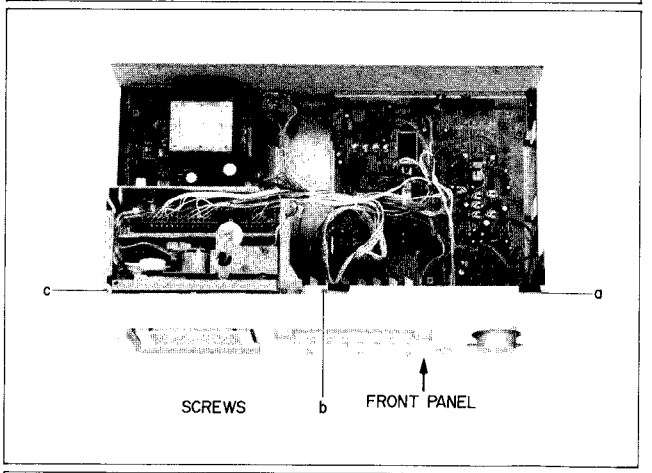


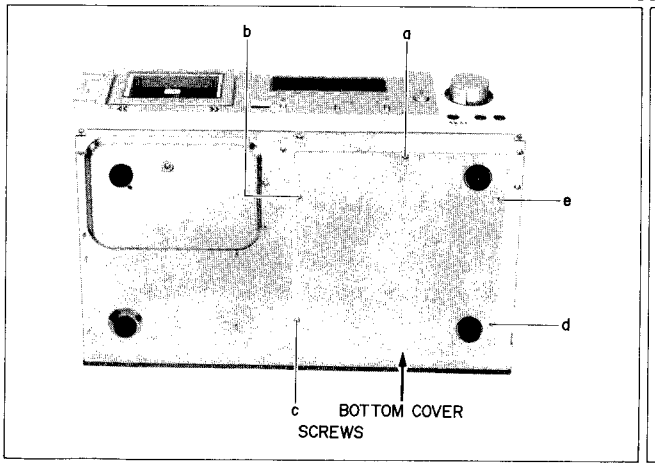


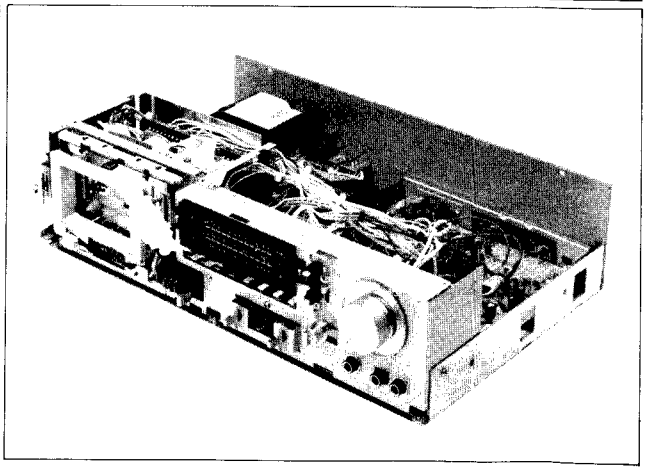




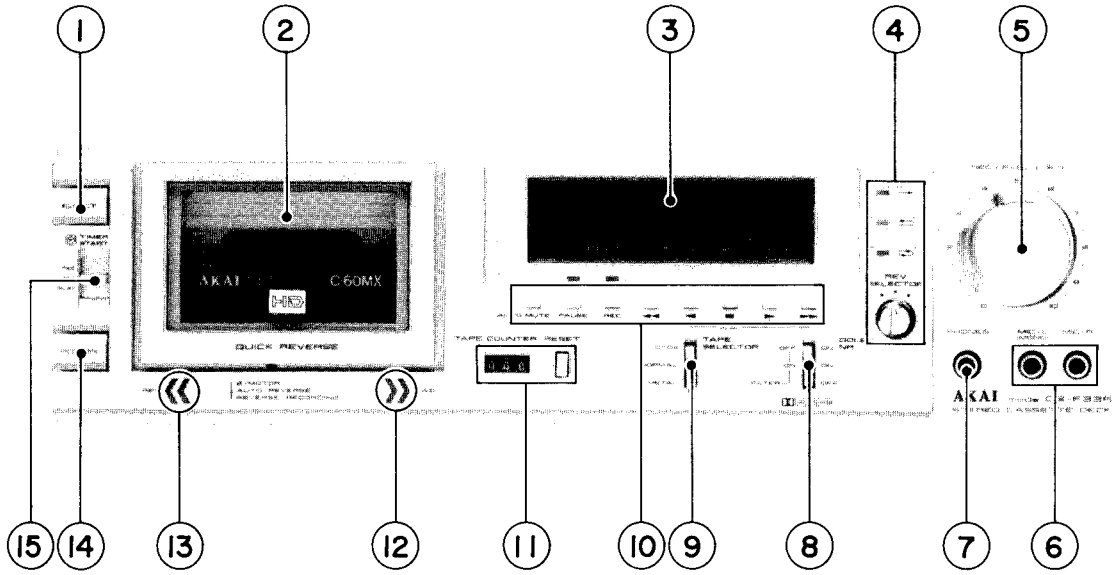








III. CONTROLS



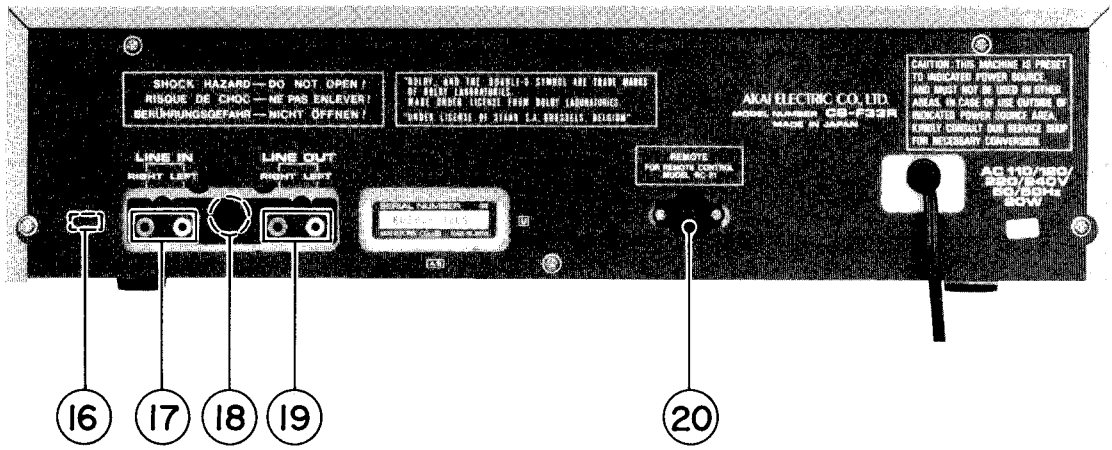


Fig. 1 Controls

1. EJECT BUTTON
2. CASSETTE RECEPTACLE
3. LED BAR METERS (left and right)
4. Reverse (REV) SELECTOR and Indicators
5. LEFT ◄● RIGHT Recording Level Controls
6. MICROPHONE JACKS MIC-L: (left), (MONO) MIC-R: (right)
7. HEADPHONES JACK (PHONES)
8. DOLBY NR AND FILTER SWITCH
9. TAPE SELECTOR
10. OPERATING BUTTONS
11. TAPE COUNTER AND RESET BUTTON
12. Forward (FWD) Direction Indicator
13. Reverse (REV) Direction Indicator
14. POWER SWITCH
15. TIMER START SELECTOR
16. LINE/DIN SELECTOR (Some models do not have this facility)
17. LINE IN JACKS (right and left)
18. DIN JACK (Some models do not have this facility)
19. LINE OUT JACKS (right and left)
20. REMOTE CONTROL JACK

IV. PRINCIPAL PARTS LOCATION

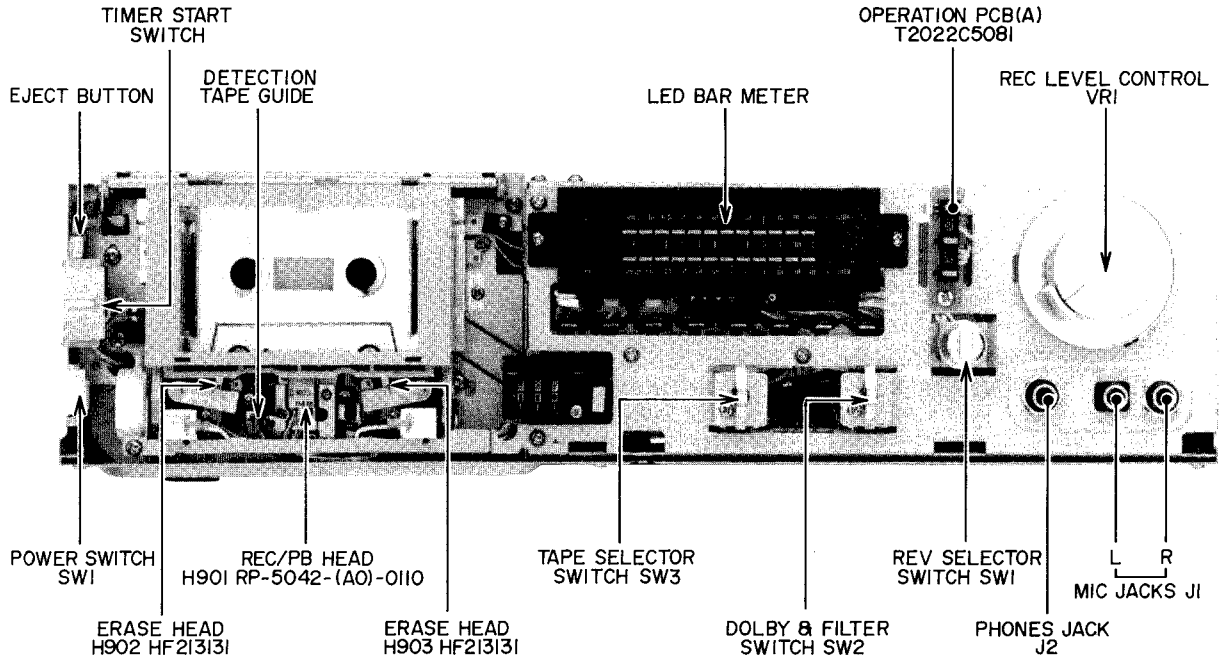


Fig. 2 Front View

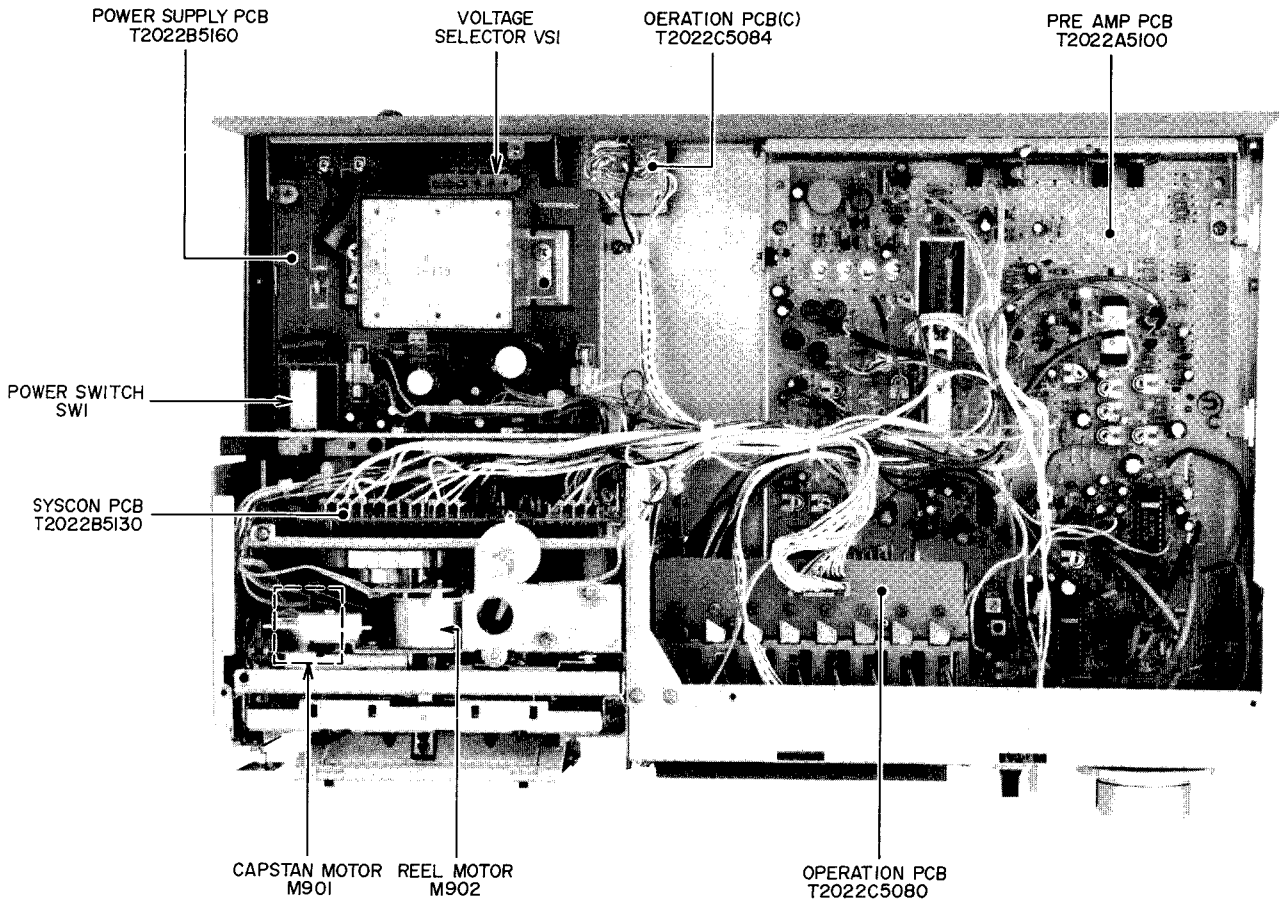


Fig. 3 Top View

V. VOLTAGE AND CYCLE CONVERSION

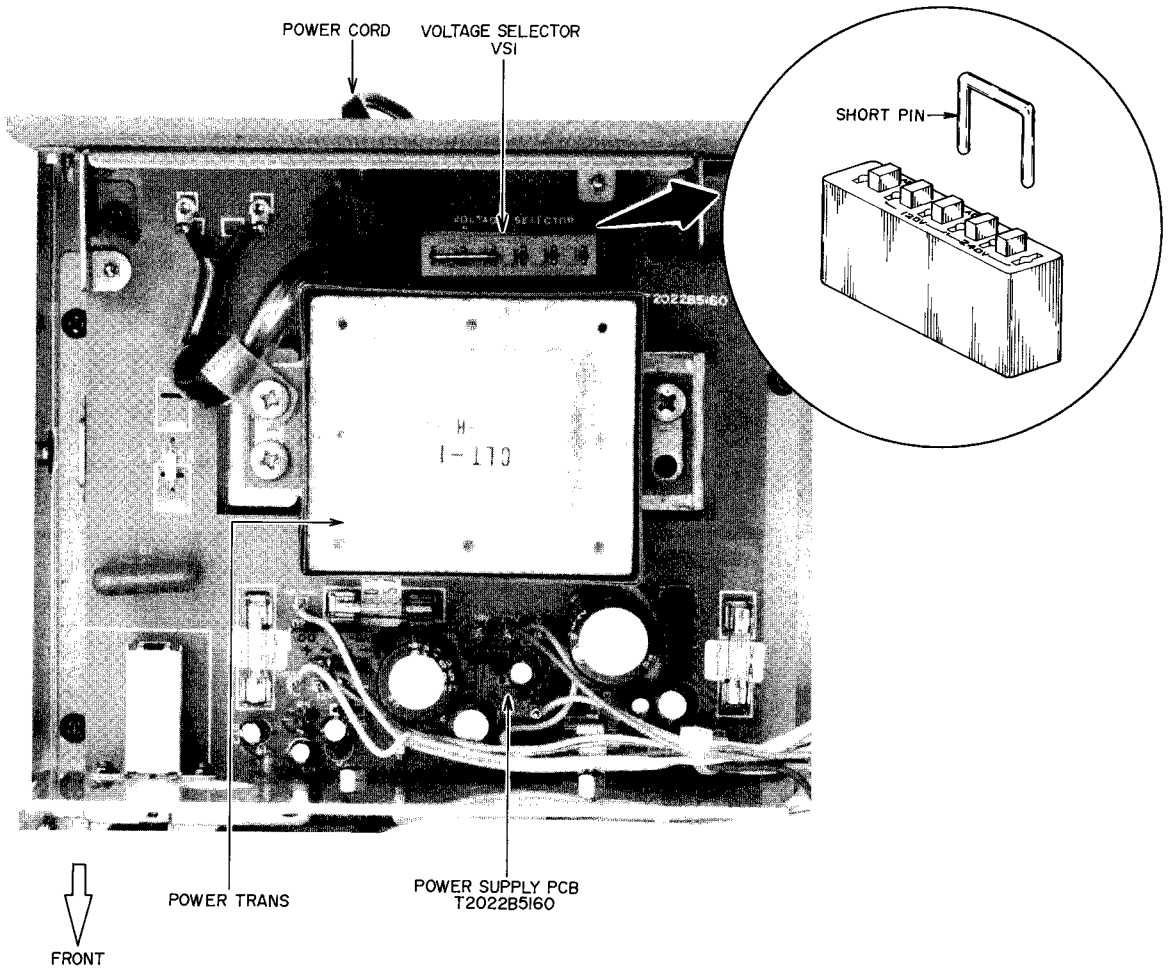


Fig. 4 Voltage Conversion (U/T Model only)

1. VOLTAGE CONVERSION

Models for Canada, Europe, USA, UK, Australia and Japan are not equipped with this facility.

Each machine is preset at the factory according to destination, but some machines can be set to 110V, 120V, 220V or 240V as required.

If voltage change is necessary, this can be accomplished as follows:

1) Disconnect power cord.
2) Loosen holding screws and remove upper cover.
3) Remove short pin plug from present holes and replace in correct holes.
   Follow the markings explicitly.

2. CYCLE CONVERSION

With DC motor, cycle conversion is not necessary.

VI. MECHANICAL ADJUSTMENT

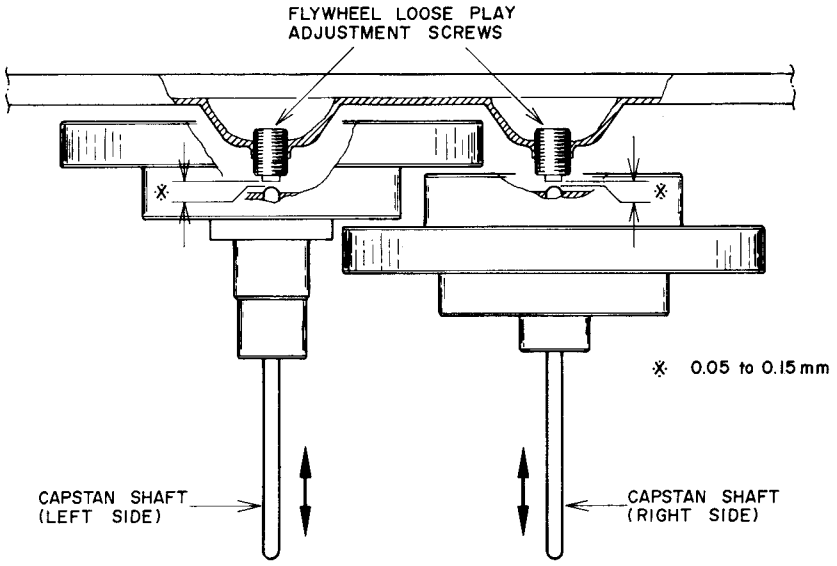


Fig. 5

1. FLYWHEEL LOOSE PLAY ADJUSTMENT (Refer to Fig. 5)

Adjust by turning flywheel loose play adjustment screws to obtain 0.05 to 0.15 mm of loose play when the capstan shaft is moved as indicated by the arrow mark.

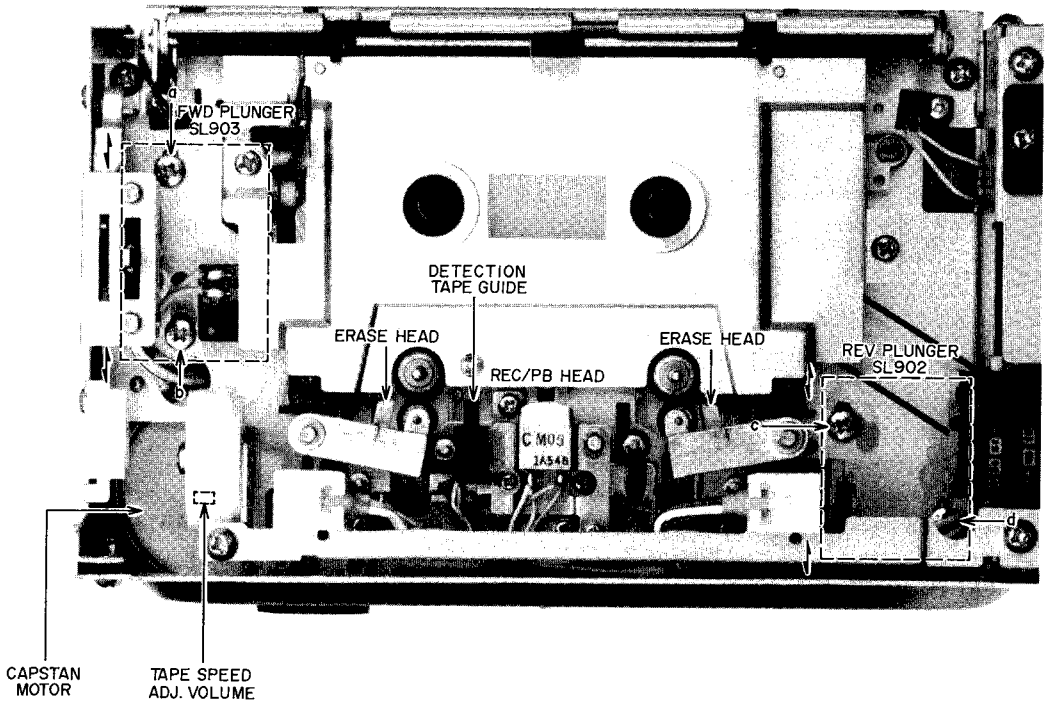


Fig. 6

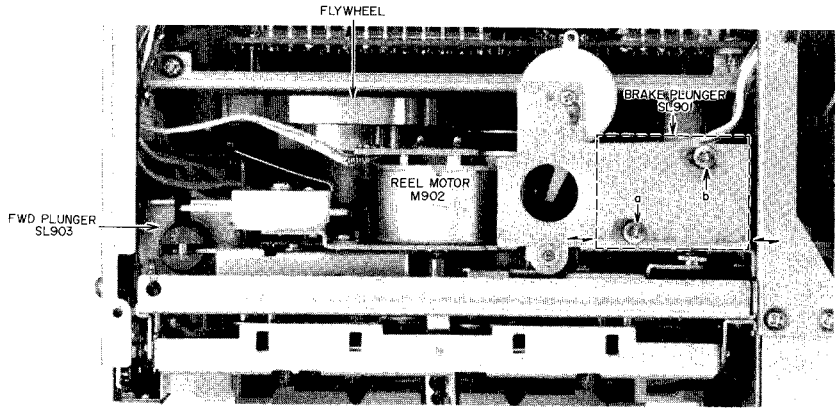


Fig. 7

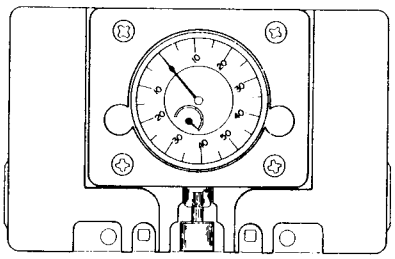


Fig. 8 AKAI Head Projection Gauge

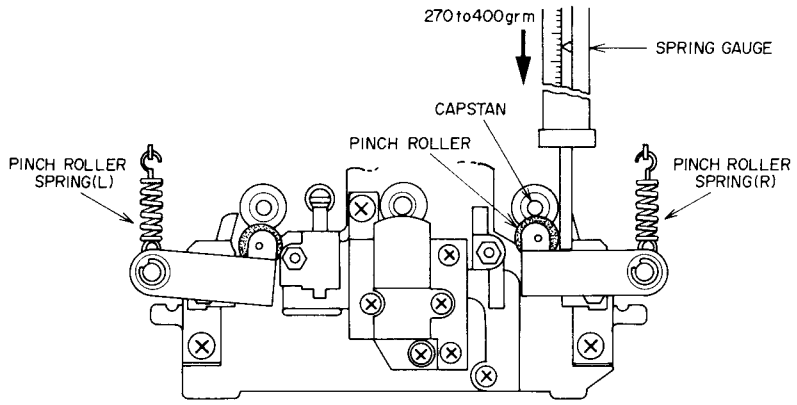


Fig. 9

2. PLUNGER POSITION ADJUSTMENT

1) Forward Plunger Adjustment (Refer to Figs. 6, 8)
   Set the AKAI Head Projection Gauge.
   Adjust the screws (a) and (b) so that when FWD PAUSE mode is engaged, the Head Projection Gauge indicates to 2.7 mm±0.1 mm.
2) Brake Plunger Adjustment (Refer to Figs, 7, 8)
   Set the AKAI Head Projection Gauge.
   Adjust the screws (a) and (b) so that when FWD PLAY mode is engaged, the Head Projection Gauge indicates to 3.35 mm±0.1 mm.
3) Reverse Plunger Adjustment (Refer to Figs. 6, 8)
   Set the AKAI Head Projection Gauge.
   Adjust the screws (c) and (d) so that when REV PAUSE mode is engaged, the Head Projection Gauge indicates to 2.5 mm±0.1 mm.

NOTE: This adjustment made is order of numbers.

3. PINCH ROLLER PRESSURE MEASUREMENT (Refer to Fig. 9)

Put in FWD PLAY mode. Push pinch roller arm down with the spring gauge push the pinch roller 1 ~ 2 mm from the capstan and release slowly.

Read the spring gauge at the moment the pinch roller touches the capstan and bigins to rotate.

Specified contact pressure measurement of 270 to 400 grm.

If there is no measurement obtained, replace the pinch roller spring. Do the same for the reverse side.

4. WINDING TORQUE MEASUREMENT IN EACH MODE

Insert cassette torque meter and measure in each mode. For fast forward and rewind measure at the end of the tape when the tape has stopped running.

Forward, Reverse : 30 to 55 g-cm
Fast Forward, Rewind: 75 to 130 g-cm

5. TAPE SPEED ADJUSTMENT (Refer to Fig. 6)

Connect a frequency counter to line output terminals. Playback a 1,000 Hz pre-recorded test tape and adjust tape speed adjustment volume to obtain a tape speed of 995 Hz±5 Hz.

VII. HEAD ADJUSTMENT

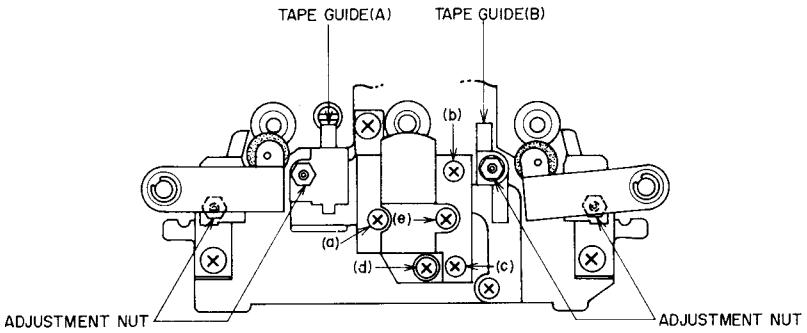


Fig. 10

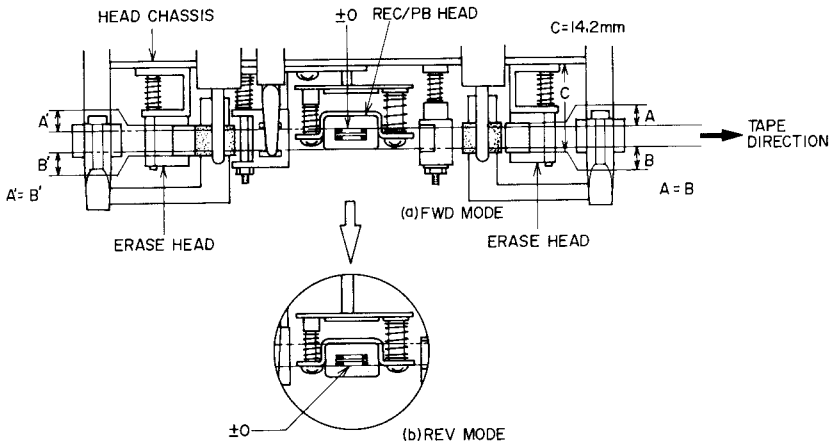


Fig. 11

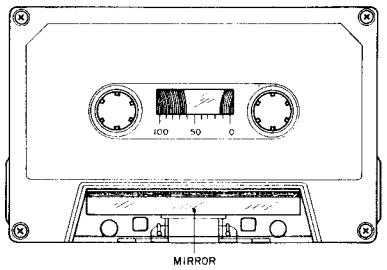


Fig. 12

1. ERASE HEAD HEIGHT ADJUSTMENT (Refer to Figs. 10 to 12)

Usually this adjustment is not carried out. If adjustment is necessitated by head change for example, proceed as follows:

Adjust by turning the adjustment nut until the height, taken from the surface of the Head Chassis to the lower tip of the Erase Head Core (Fig. 11 C) is 14.2 mm

2. TAPE GUIDE HEIGHT ADJUSTMENT (Refer to Figs. 10 to 12)

1) When using an ordinary cassette, the tape guides and heads, etc. are not visible. As shown in Fig. 12 use a cassette tape from which part of the cassette case has been cut out and a mirror installed easy visibility of the head area when making tape guide height adjustment.
2) The adjustment to Tape Guides (A) and (B) are carried out with the Erase Head at the standard height. Put into the FWD mode and and adjust Tape Guide (A). Make the width of the sections (A and B in Fig. 11) protrading from both ends of the tape of the left side Erase Head the same.

   Next in the REV mode adjust Tape Guide (B) until A and B in Fig. 11 are the same. Finally, in either FWD or REV modes. Check that the tape is running smoothly without catching on the tape guides.

3. REC/PB HEAD HEIGHT ADJUSTMENT (Refer to Figs. 10 to 12)

Playback the Head Height Adjustment Tape (4 Track 1,000 Hz) in the Reverse Play Mode and adjust the screws (a) (b) and (c) until the output level of both channels reaches maximum.

Next put in the Forward Mode and adjust the screws (d) and (e) so that output level reaches maximum same as above.

4. REC/PB HEAD AZIMUTH ADJUSTMENT (Refer to Fig 10)

1) Playback the azimuth adjustment tape (10 kHz) in the REV PLAY mode and adjust screws (a), (b), (c) until the output level of both channels reaches maximum (the AC voltmeter registers maximum).
2) Put in reverse mode and check that the output level is the same as in the forward mode. If different, adjust with screws (a), (b), (c) until the level is the same in both modes.
3) After adjustment, check both the head height and the azimuth.

Notes:

1. Be sure to clean the heads prior to head adjustment.
2. Be careful not to use a magnetized driver or other magnetized tools in the vicinity of the heads.
3. Be sure to demagnetize the heads with a Head Demagnetizer before and after head adjustment.

VIII. ELECTRICAL ADJUSTMENT

1. QUICK REVERSE SENSITIVITY ADJUSTMENT

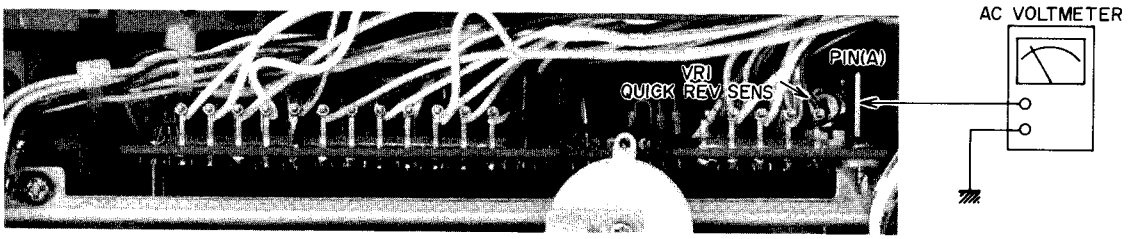


Fig. 13 Syscon P.C Board T2022B5120 (C,A)
T2022B5130 (U,J,E,B,S)

1) Make a tapeless cassette pack by removing the tape from the white colored test tape.
2) Connect the AC Voltmeter between the PIN (A) and earth.
3) Using the tapeless cassette pack, adjust VR-1 so that the AC Voltmeter indicates 10V±0.5V at REV play mode.

NOTE: Use only a clean tapeless cassette pack.

2. AMPLIFIER ADJUSTMENT

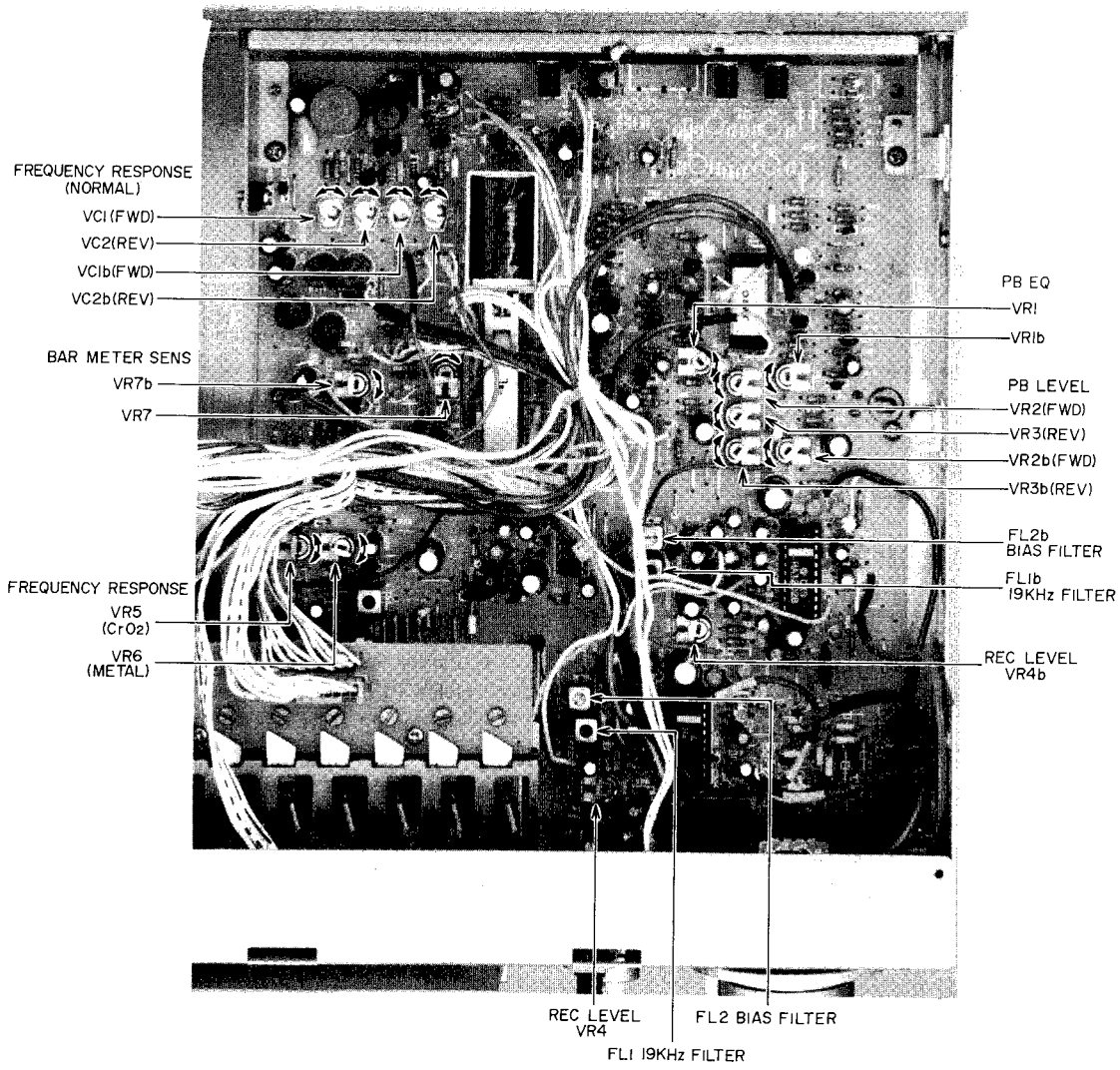


Fig. 14

STEP	ADJUSTMENT ITEM	TEST TAPE SUPPLY SIGNAL	MODE	ADJUSTMENT POINT	RESULT	REMARKS
1	FWD Playback Level	333 Hz 0 VU Test Tape	FWD PB	VR2	−5.5±0.5 dBm (410 mV)	
2	REV Playback Level	333 Hz 0 VU Test Tape	REV PB	VR3	−5.5±0.5 dBm (410 mV)	
3	Bar Meter Sensitivity	1,000 Hz −5.5 dBm from oscillator	FWD-REC	VR7	0 VU indication	
4	PB EQ	10,000 Hz Test Tape	FWD-REV/PB	VR1	−19±1.5 dBm	
5	Normal Position Frequency Response (FWD)	Normal Blank Tape, 1,000 Hz 10,000 Hz −24.5 dBm recording	FWD-REC/PB	VC1	1,000 Hz to 10,000 Hz flat response	
6	Normal Position Frequency Response (REV)	Normal Blank Tape 1,000 Hz, 10,000 Hz −25.5 dBm recording	REV-REC/PB	VC2	1,000 Hz to 10,000 Hz flat response	
7	CrO_2 Position Frequency Response	CrO_2 Blank Tape, 1,000 Hz, 10,000 Hz −25.5 dBm recording	FWD/REV-REC/PB	VR5	1,000 Hz to 10,000 Hz flat response	Set tape selector to CrO_2 Position
8	Metal Position Frequency Response	CrO_2 Tape, 1,000 Hz, 10,000 Hz −25.5 dBm recording	FWD/REV-REC/PB	VR6	1,000 Hz to 10,000 Hz flat response	Set tape selector to Metal Position
9	Recording Level	Normal Blank Tape 1,000 Hz −5.5 dBm recording	FWD/REV-REC/PB	VR4	−5.5±0.5 dBm (410 mV)	
10	FWD Distortion Factor confirmation	1,000 Hz −5.5 dBm recording	FWD-REC/PB		Normal <0.8% CrO_2 <0.7% Metal <0.7%	NOTE 7
11	REV Distortion Factor Confirmation	1,000 Hz −5.5 dBm recording	REV-REC/PB		Normal <0.8% CrO_2 <0.7% Metal <0.7%	NOTE 7
12	Bias Filter	No signal input	REC	FL2	AC Voltmeter indicates to minimum	Set tape Selector to Metal position. Set REC Volume to maximum NOTE 8
13	19 kHz Filter	19 kHz from Oscillator	REC	FL1	AC Voltmeter indicates to minimum	Set Dolby NR switch to ON. Filter ON position NOTE 8, 9

NOTES:

1. Input selector switch to LINE.
   (The U/T, CSA, AAL and JPN Models do not have this facility.)
2. Because each of these adjustments is vital to perfect Dolby NR circuit operation, ensure that they are carried out with as few errors as possible.
3. Except for Step 7, 8, 10, 11 and 12, set Tape Selector to NORMAL Position.
4. Except for Step 13 set Dolby NR switch to OFF Position.
5. Use the following cassette measureing tapes:
   Normal Tape: Maxell UD C-60
   CrO_2 Tape: TDK SA C-60
   Metal Tape: TDK MA-C C-60
6. Use the test tape of 10 kHz recorded at the level of −18.7 dBm.
7. If it does not comply with the specifications, repeat Steps 5 to 9 and readjust.
8. Unless the core is moved unitentionally this adjustment is not necessary.
9. Adjust the oscillator's frequency to give a frequency counter reading of 19.00 kHz.

IX. DC RESISTANCE OF VARIOUS COILS

DESCRIPTION	NAME	DC RESISTANCE
REC/PB Head	RP-5402-(AO)-0110	300 ohms±20%
Erase Head	HF213131	3.2 ohms
Plunger Solenoid	1240PLT	90 ohms±10%

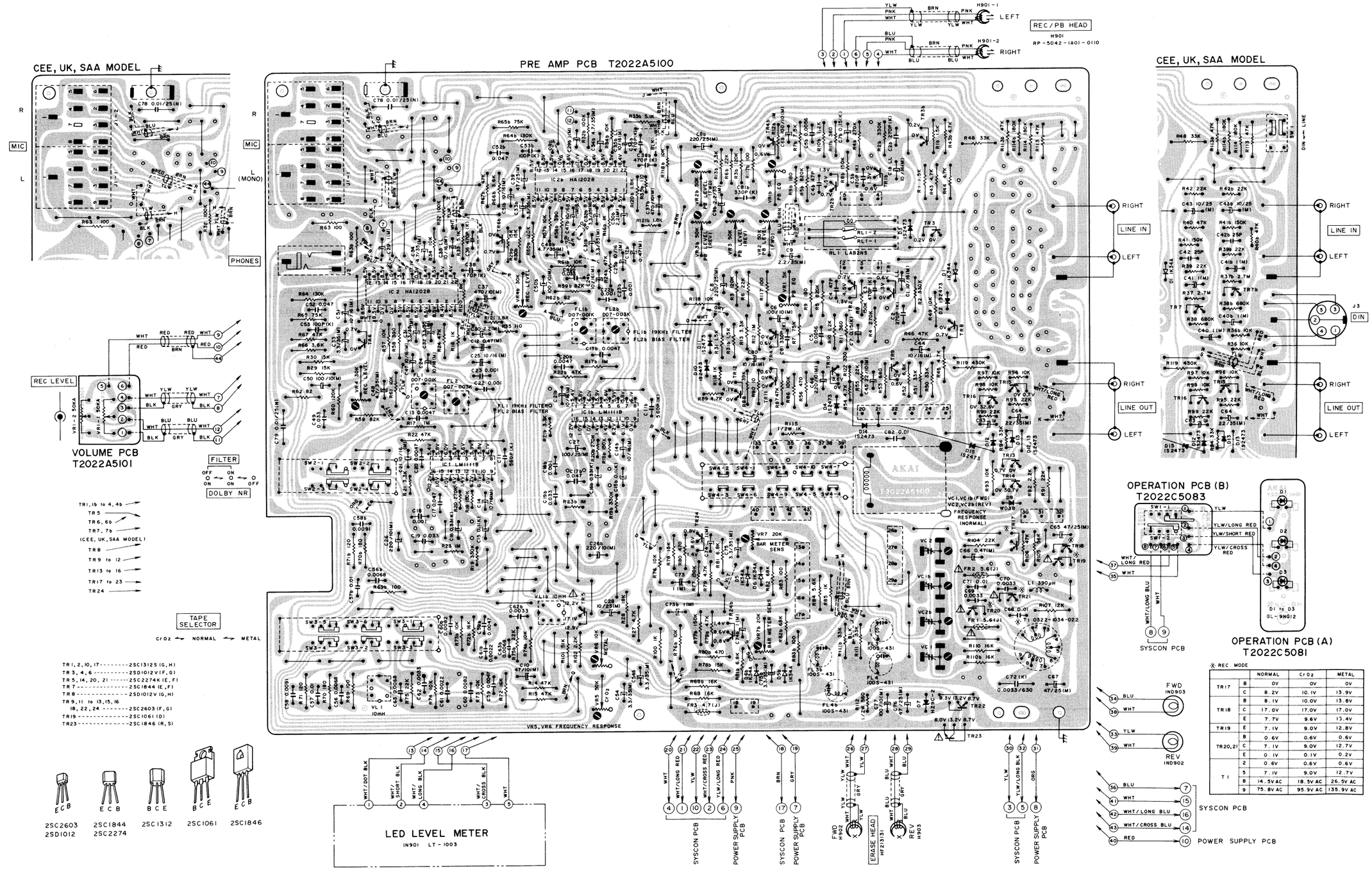
X. CLASSIFICATION OF VARIOUS P.C BOARDS

1. P.C BOARD TITLES AND INDENTIFICATION NUMBERS

P.C BOARD TITLE	P.C BOARD NUMBER	REMARKS
Pre Amp P.C Board	T2022A5100	
Volume P.C Board	T2022A5101	
Syscon P.C Board	T2022B5120	CSA, AAL
Syscon P.C Board	T2022B5130	U/T, JPN, CEE, UK, SA/
Power Supply P.C Board	T2022B5160	U/T
Power Supply P.C Board	T2022B5170	JPN
Power Supply P.C Board	T2022B5180	CSA, AAL
Power Supply P.C Board	T2022B5190	CEE, UK, SAA
Operation P.C Board	T2022C5080	
Operation P.C Board (A)	T2022C5081	
Operation P.C Board (B)	T2022C5083	
Operation P.C Board (C)	T2022C5084	
Lamp P.C Board	T2022D5140	
Detector P.C Board	T2022D5150	
LED P.C BOARD	T2022D5200	
Filter P.C Board	CL-5026	

2. COMPOSITION OF VARIOUS P.C BOARDS

1) Pre Amp P.C Board T2022A5100 (2ED), Volume P.C Board T2022A5101 and Operation P.C Board (A/B) T2022C5081/T2022C5083.



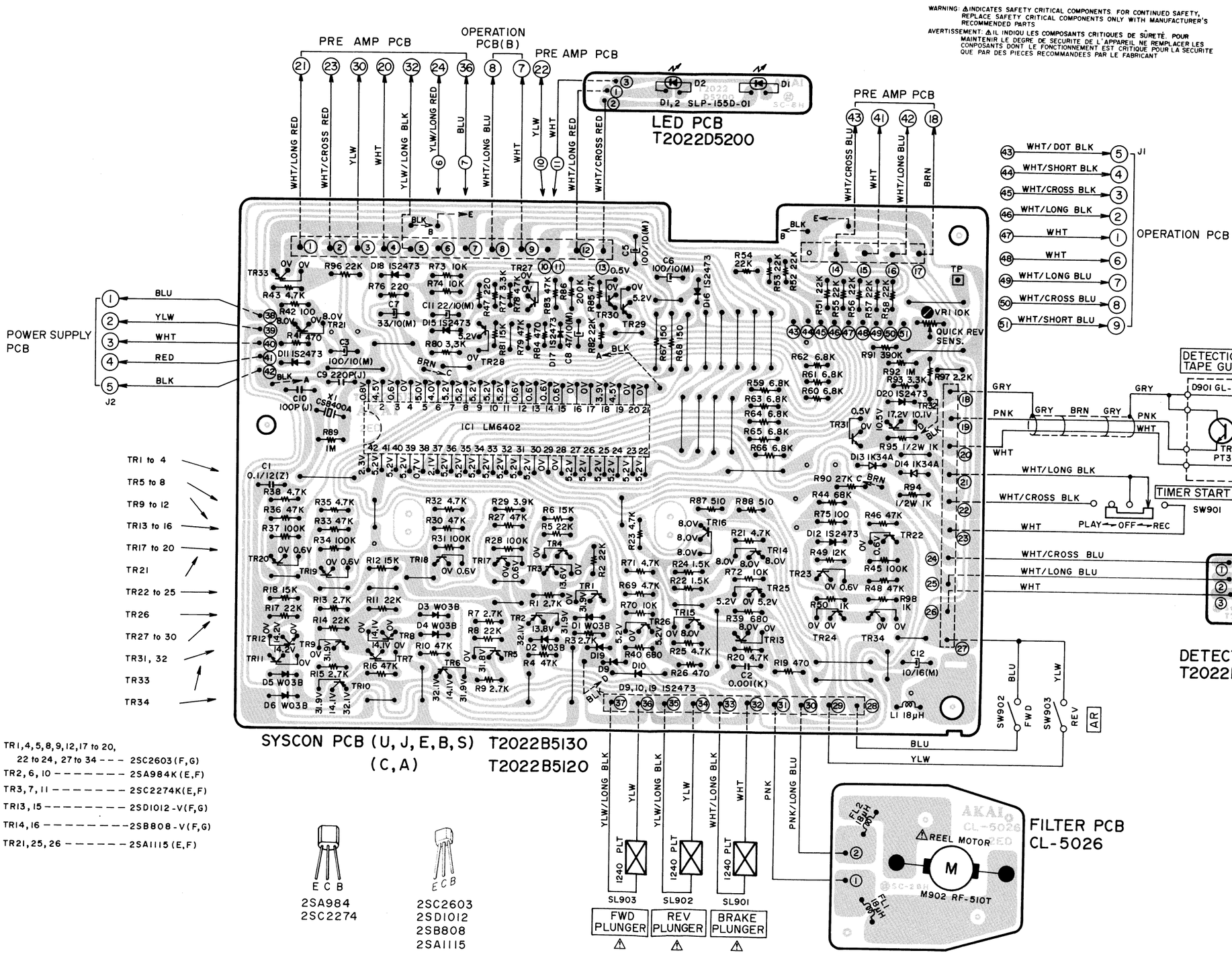
※ REC MODE

		NORMAL	CrO2	METAL
TR17	B	0V	0V	0V
	C	8.2V	10.1V	13.9V
TR18	B	8.1V	10.0V	13.8V
	C	17.0V	17.0V	17.0V
	E	7.7V	9.6V	13.4V
TR19	E	7.1V	9.0V	12.8V
TR20, 21	B	0.6V	0.6V	0.6V
	C	7.1V	9.0V	12.7V
	E	0.1V	0.1V	0.2V
T1	2	0.6V	0.6V	0.6V
	5	7.1V	9.0V	12.7V
	8	14.5V AC	18.5V AC	26.5V AC
	9	75.8V AC	95.9V AC	135.9V AC

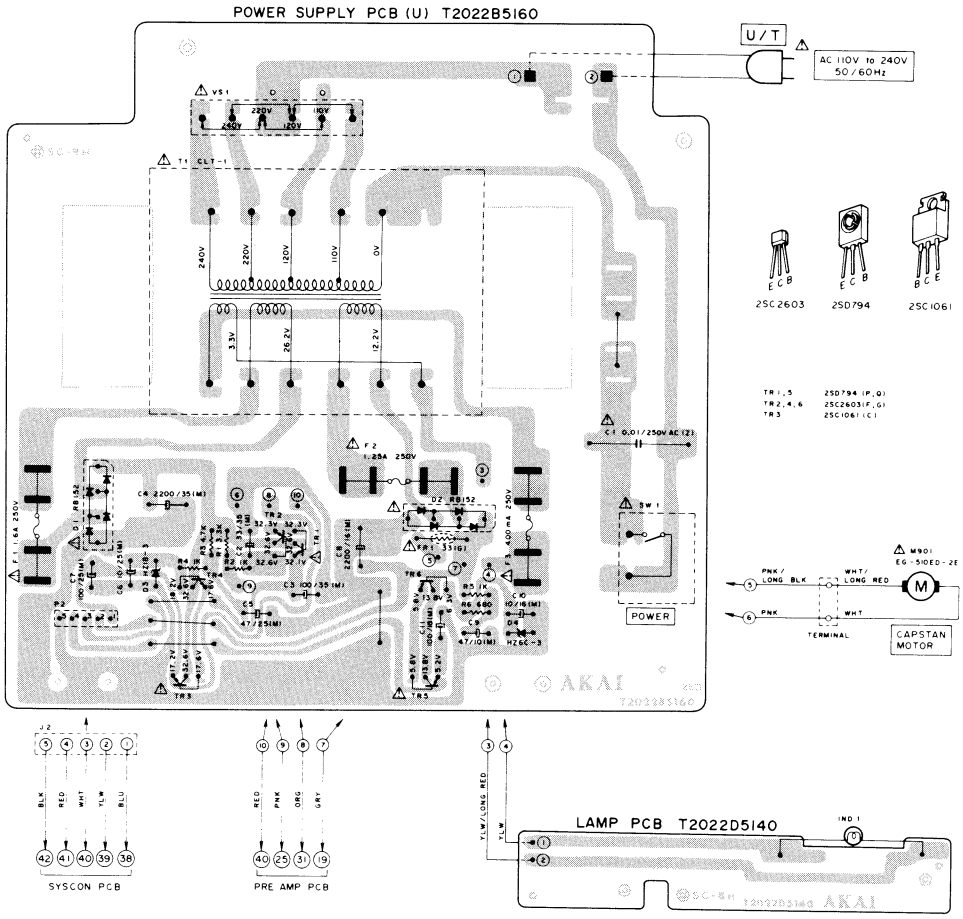
WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQU LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES CONPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

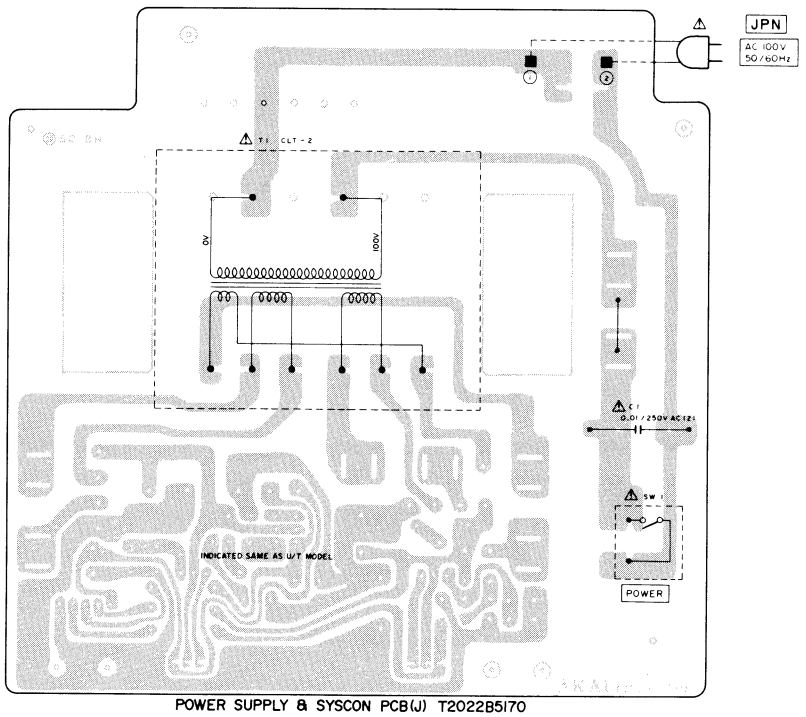
2) Syscon P.C Board (U,J,E,B,S) T2022B5130 (2ED)/(C,A) T2022B5120 (2ED), Filter P.C Board CL-5026 (2ED), Detector P.C Board T2022D5150 and LED P.C Board T2022D5200.



3) Power Supply P.C Board (U) T2022B5160 (2ED) and Lamp P.C Board T2022D5140



4) Power Supply P.C Board (J) T2022B5170 (2ED)

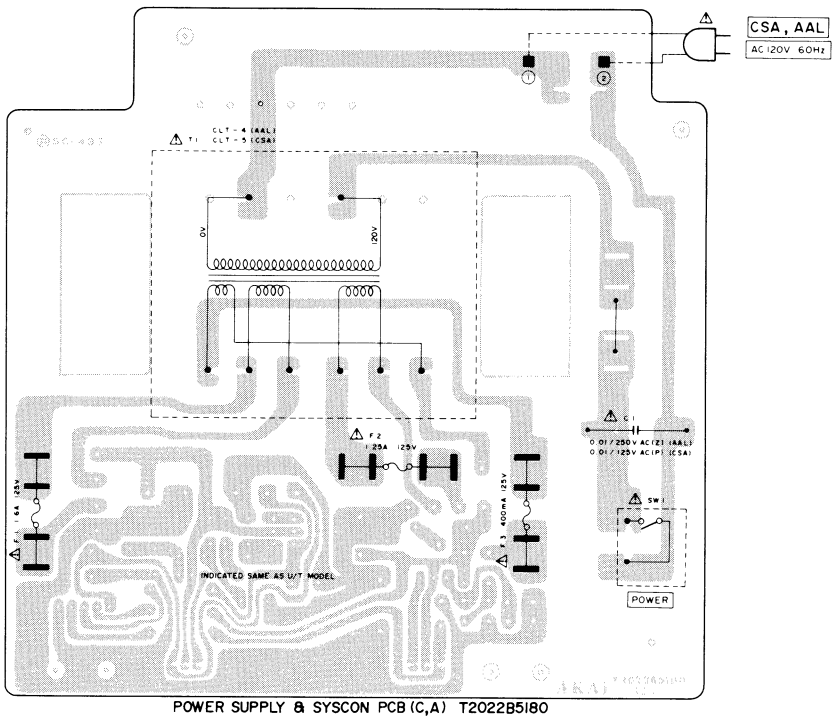


POWER SUPPLY & SYSCON PCB(J) T2022B5170

WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

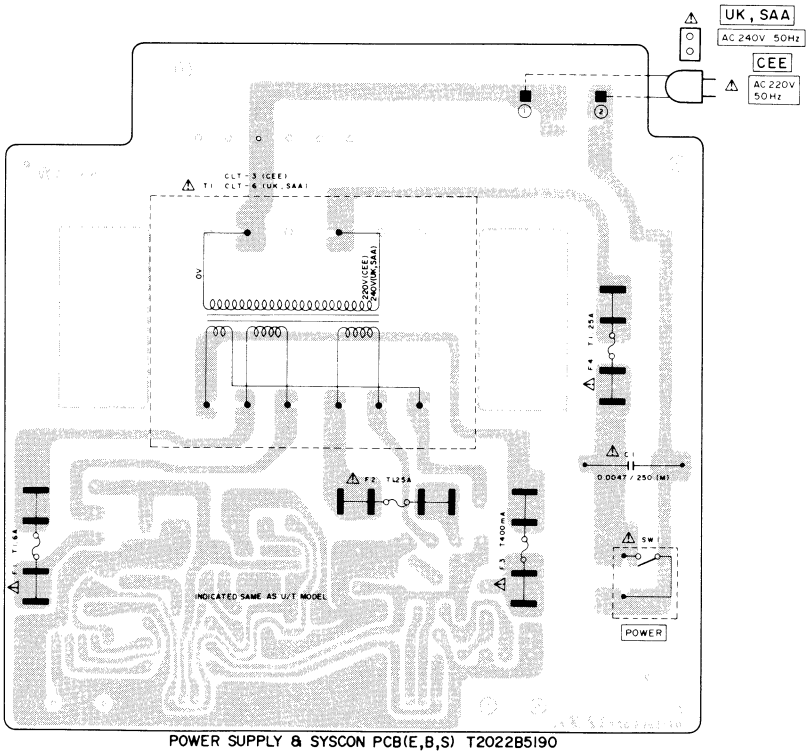
AVERTISSEMENT: ⚠IL INDIQU LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES CONPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

5) Power Supply P.C Board (C, A) T2022B5180 (2ED)



POWER SUPPLY & SYSCON PCB (C,A) T2022B5180

6) Power Supply P.C Board (E, B, S) T2022B5190 (2ED)

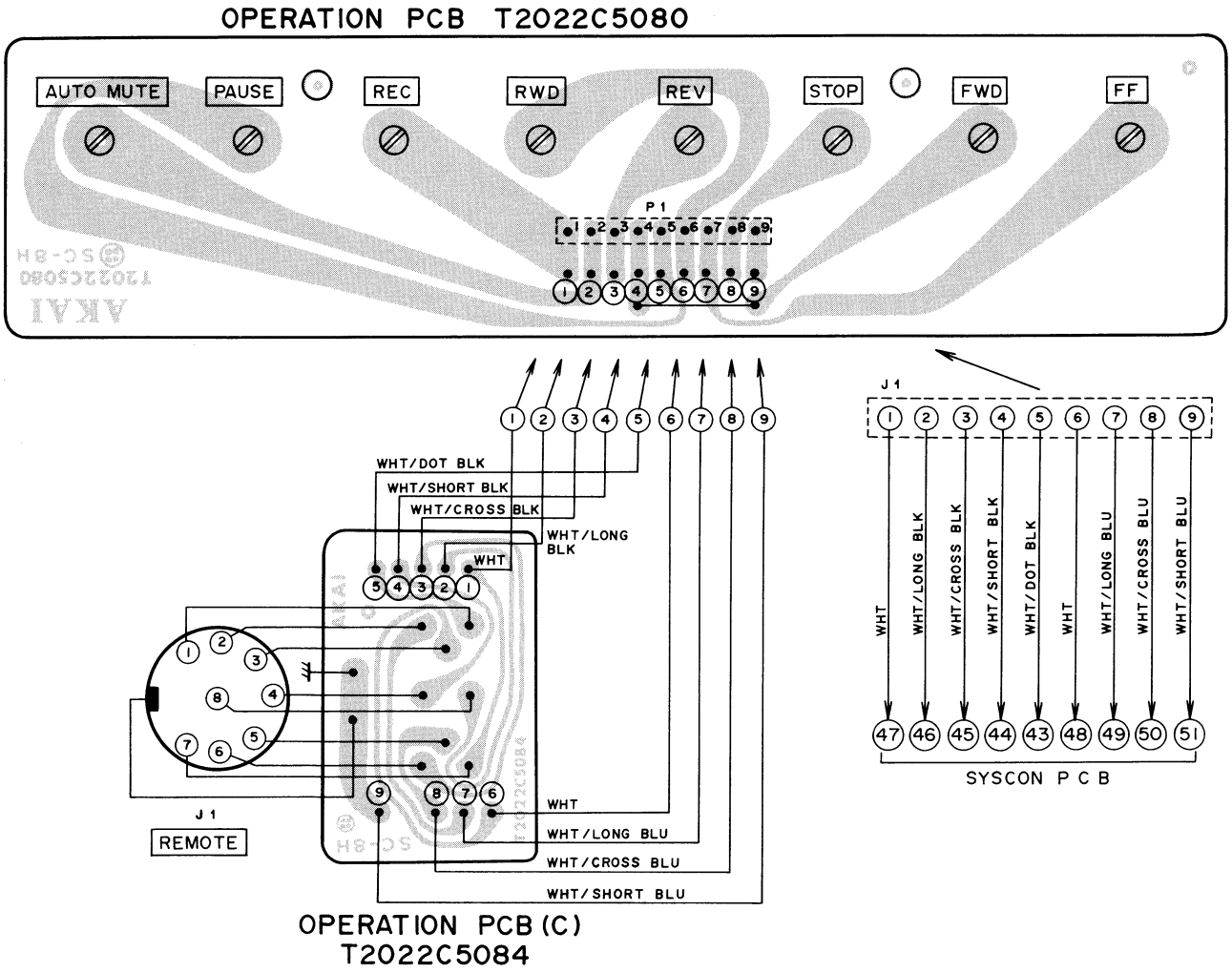


POWER SUPPLY & SYSCON PCB(E,B,S) T2022B5190

WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQU LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES CONPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

7) Operation P.C Board T2022C5080 and Operation P.C Board (C) T2022C5084



SECTION 2

PARTS LIST

TABLE OF CONTENTS

1. RECOMMENDED SPARE PARTS LIST 26
2. HEAD BASE BLOCK 28
3. REEL BASE BLOCK 29
4. MECHA FRAME BLOCK 30
5. GROUP (1) P.C BOARD (T2022A5100, T2022A5101) BLOCK 32
6. SYS. CON. P.C BOARD (T2022B5120/T2022B5130) BLOCK 32
7. POWER SUPPLY P.C BOARD (T2022B5160/ T2022B5170/T2022B5180/T2022B5190) BLOCK 33
8. LED P.C BOARD (T2022D5200) BLOCK 33
9. OPERATION (C) P.C BOARD (T2022C5084) BLOCK 33
10. OPERATION (A) P.C BOARD (T2022C5081) BLOCK 33
11. OPERATION (B) P.C BOARD (T2022C5083) BLOCK 33
12. ASSEMBLY BLOCK 34
13. FINAL ASSEMBLY BLOCK 36

INDEX 37

Resistor and Capacitor which are not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

HOW TO USE THIS PARTS LIST

1. This parts list is compiled by various individual blocks based on assembly process.
2. When ordering parts, please describe parts number, serial number, and model number in detail.
3. How to read list.

The reference number corresponds with illustration or photo number of that particular parts list.

This number corresponds with the Figure Number.

This number corresponds with the individual parts index number in that figure.

A small "x" indicates the inability to show that particular part in the Photo or Illustration.

12-115x

Ref. No.	Parts No.	Description
		FLYWHEEL BLOCK #13
12-115x	800425	Flywheel Block Assy. Comp.
12-116	244506	Flywheel Only
12-117x	244754	Felt, Flywheel
12-118	251324	Main Metal Case
12-119	253080	Main Metal

4. The symbol numbers shown on the P.C. Board list can be matched with the Composite Views of components of the Schematic Diagram or Service Manual.
5. The indications of Resistors and Capacitors in the photos of P.C. Board are being eliminated.
6. The shape of the parts and parts name, etc. can be confirmed by comparing them with the parts shown on the Electrical Parts Table of P.C. Board.
7. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List.
   It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index. (meaning of ref. no. outlined in Item 3 above).
8. Utilize separate "Price List for Parts" to determine unit price. The most simple method of finding parts Price is to utilize the reference number.

CAUTION:

1. When placing an order for parts, be sure to list the parts no. model no., and description. There are instances in which if any of this information is omitted, parts cannot be shipped or the wrong parts will be delivered.
2. Please be careful not to make a mistake in the parts no. If the parts no. is in error, a part different from the one ordered may be delivered.
3. Because parts number and parts unit supply in the Preliminary Service Manual (Basic Parts List) may be partially changed, please use this parts list for all future reference.

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMEMNDED PARTS.

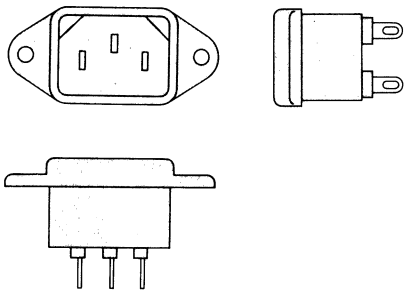
AVERTISSEMENT: ⚠ IL INDIQU LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

AC INLET SYSTEM

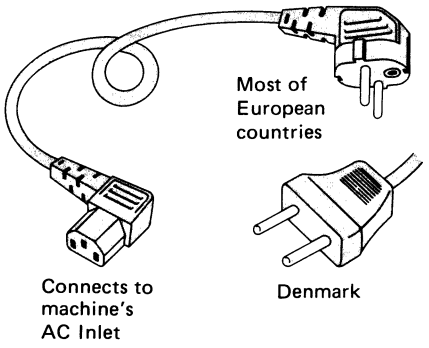
This model is equipped with an AC INLET SYSTEM. Please refer to the AC INLET SYSTEM CHART below for the specific type. By the AC INLET SYSTEM, AC (mains) cord can be connected to and disconnected from the model because the model is provided with socket exclusively for AC (mains) cord on its main body.
Please note, however, that certain models are not equipped with this system and has a built-in AC (mains) cord as before.

AC INLET SYSTEM CHART

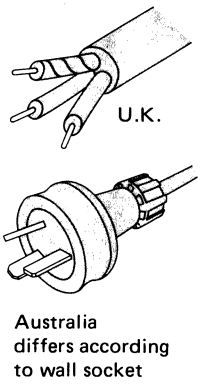
CLASS I



Picture 1
AC INLET to be installed on machines

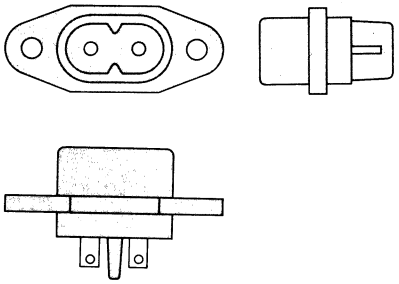


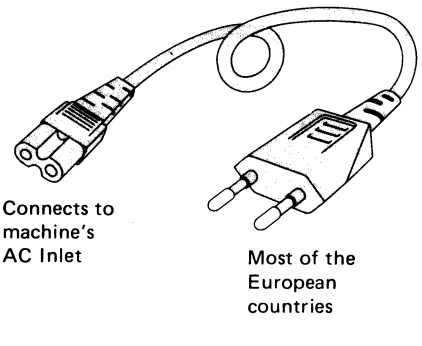
Picture 2
AC (mains) cord

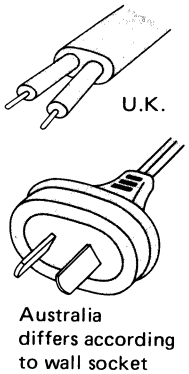


CLASS II

▣ This mark indicating double insulation will be attached to machine's rear panel







Parts List for AC (mains) Cord Set

Standard		Description	Type of AC Inlet	Parts No.
Class I	CEE	Cord Set CEE (3 cores)	3P	EW302993
	UK	Cord Set UK (3 cores)	3P	EW302994
	SAA	Cord Set SAA (3 cores)	3P	EW302996
	U/T	Cord Set U/T (3 cores)	3P	EW302646
Class II	CEE	Cord Set CEE (2 cores)	2P	EW638144
	UK	Cord Set UK (2 cores)	2P	EW302995
	SAA	Cord Set SAA (2 cores)	2P	EW302991
	U/T	Cord Set U/T (2 cores)	2P	EW302899

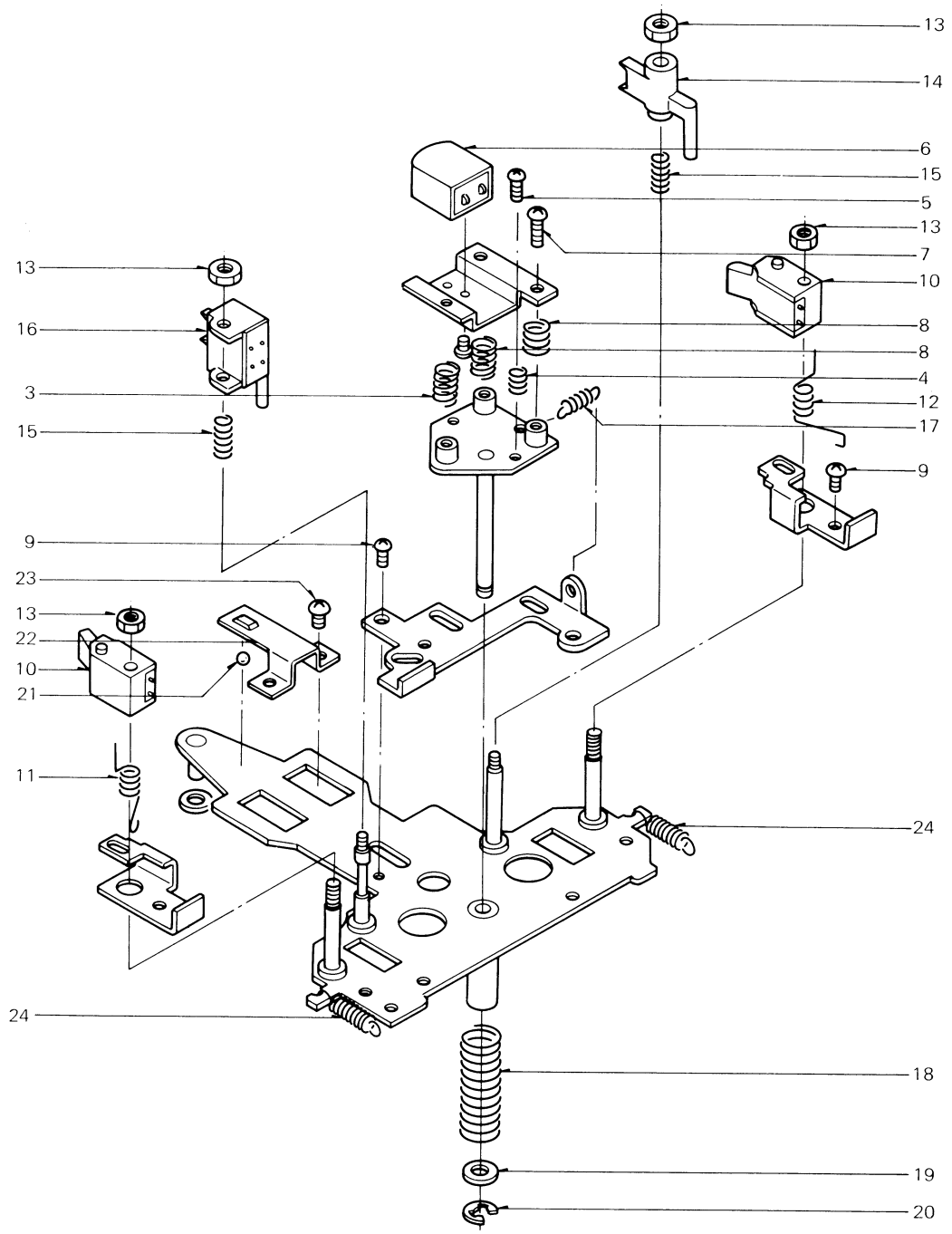
1. RECOMMENDED SPARE PARTS LIST

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

Ref. No.	Parts No.	Description	Note
1- 1.	BHT2022A110A	HEAD BASE BLK CS-F33R	
1- 2.	BI312117	REW IDLER ASSY	
1- 3.	BI312118	TAKE-UP IDLER ASSY	
1- 4.	BMT2022A080A	⚠ MOTOR (PULLEY) BLK CS-F33R	
1- 5.	BMT2016A320A	⚠ REEL MOTOR BLK (W/PULLEY) GX-F35	
1- 6.	BR328424	TAKE-UP REEL TABLE ASSY	
1- 7.	BT311464	⚠ TRANS POWER CLT-11	U
1- 8.	BT311470	⚠ TRANS POWER CLT-12	J
1- 9.	BT311488	⚠ TRANS POWER CLT-13	E
1-10.	BT311475	⚠ TRANS POWER CLT-14	A
1-11.	BT311505	⚠ TRANS POWER CLT-15	C
1-12.	BT311494	⚠ TRANS POWER CLT-16	B, S
1-13.	BZT2010A070A	DETECTION TAPE GUIDE BLK CS-M40R	
1-14.	EC300034	C S-FIX H ECR-CA100H12 9.0-100	
1-15.	ED330987	⚠ D SILICON RB152 200/1.5A	
1-16.	ED308952	D GERMA V 1K34A-LR F07	
1-17.	ED329006	D LED GL-9NG12 GRN	
1-18.	ED322772	D LED SLP-155D-01 RED	
1-19.	ED328701	D LED SLP-455D-01 ORG	
1-20.	ED560913	D SILICON V 1S2473VE	
1-21.	ED306109	D SILICON W03B 100/1.0A	
1-22.	ED329449	D ZENER H HZ18 3	
1-23.	ED319167	D ZENER H HZ6 C3	
1-24.	ED318859	D ZENER H HZ9 C2	
1-25.	EF668474	⚠ FUSE SEMKO T 250V 0.40A	E, B, S (F3)
1-26.	EF602550	⚠ FUSE SEMKO T 250V 1.25A	E, B, S (F2, F4)
1-27.	EF601964	⚠ FUSE SEMKO T 250V 1.60A	E, B, S (F1)
1-28.	EF309389	⚠ FUSE TSC A 250V 0.40A	U, J (F3)
1-29.	EF306949	⚠ FUSE TSC A 250V 1.25A	U, J (F2)
1-30.	EF311839	⚠ FUSE TSC A 250V 1.6A	U, J (F1)
1-31.	EF308848	⚠ FUSE TSC 125V 0.40A	C, A (F3)
1-32.	EF309392	⚠ FUSE TSC 125V 1.25A	C, A (F2)
1-33.	EF308847	⚠ FUSE TSC 125V 1.60A	C, A (F1)
1-34.	EI311959	IC HA12028	
1-35.	EI312179	IC LM1111B	
1-36.	EI311710	IC LM6402	
1-37.	EJ324276	DIN J TCS46BD-01-111 P 8P	
1-38.	EJ310567	SOCKET INLET 0378PC-GS E 2P	
1-39.	EL309960	PL CORD 24.0V 50MA 450/450	IN902, 903
1-40.	EL200096	PL LEAD 3.5V 100MA	IN1
1-41.	EM329497	IND LE LT-1003 GRAPH	
1-42.	EP318644	⚠ SOLENOID 1240PLT 27V	
1-43.	EP318645	⚠ SOLENOID 1240PLT 27V	
1-44.	EP318648	RELAY LEAD LAB2NS 2NO 6V	
1-45.	ER318647	⚠ R FUSE ERD2FC 1/4W 4R7J	
1-46.	ER200595	⚠ R FUSE ERD2FC 1/4W 5R6J	
1-47.	ER328490	FILTER DB D07-001K 19KHZ	
1-48.	ER328491	FILTER DB D07-003K 100KHZ	
1-49.	ER200972	R FUSE ERD2FC 1/4W 33ROG	
1-50.	ES201804	SW LEAF BSW-47PBC 01-1 NC	SW902

Ref. No.	Parts No.	Description	Note
1-51.	ES201805	SW LEAF BSW-47PC 01-1 NC	SW903
1-52.	ES201314	SW LEVER 00430408 2-04-03S	
1-53.	ES321274	SW LEVER 63349 2-06-03S	
1-54.	ES312234	SW PUSH SDL-1P 01-1 E	
1-55.	ES312235	SW PUSH SDL-1P 01-1 J	
1-56.	ES312238	SW PUSH SDL-1P 01-1 UC	
1-57.	ES310836	SW ROTARY SRU1023S 1-02-03S	
1-58.	ES328416	SW SLIDE SSB02385 2-02-03S	SW901
1-59.	ES283072	SW SLIDE SSC22LP 2-02-02N	
1-60.	ES311975	SW SOLENOID R8150050 27V 10-2W	
1-61.	ET311977	PHOTO SENSOR SPI-201	
1-62.	ET200558	TR 2SA1115 E, F	
1-63.	ET324134	TR 2SA984K E, F	
1-64.	ET328438	TR 2SB808-V F, G	
1-65.	ET402682	TR 2SC1061 C	
1-66.	ET317919	TR 2SC1061 C, D	
1-67.	ET603257	TR 2SC1312S G, H	
1-68.	ET308954	TR 2SC1844 E, F	
1-69.	ET310920	TR 2SC1846 R, S	
1-70.	ET309353	TR 2SC2274 E, F	
1-71.	ET200985	TR 2SC2603 F, G	
1-72.	ET328437	TR 2SD1012-V F, G	
1-73.	ET328868	TR 2SD1012-V G, H	
1-74.	ET307349	TR 2SD794 P, Q	
1-75.	EV315542	R S-FIX H D8 3P 103	
1-76.	EV315753	R S-FIX H D8 3P 203	
1-77.	EV322417	R S-FIX H D8 3P 303	
1-78.	EV315540	R S-FIX H D8 3P 502	
1-79.	EV315541	R S-FIX H D8 3P 503	
1-80.	EV475470	R S-FIX V V8K1-1 3P 103	
1-81.	EV329416	VR ROTARY 16P11 × OR 15A503 15A503	
1-82.	EZ328406	OSC CE CSB400A 0.4 MHZ	
1-83.	HE325859	HEAD E HF213131 C	
1-84.	HP311634	HEAD R/P RP-5042-CM-0510 C	
1-85.	MB314317	BELT CAPSTAN	
1-86.	MB314722	BELT COUNTER	
1-87.	MC312119	COUNTER MP-390-474	
1-88.	MC312120	COUNTER MP-390-475	(BL)
1-89.	MIB601782	FLYWHEEL (A) PART	
1-90.	MIB601783	FLYWHEEL (B) PART	
1-91.	MV328322	MAIN CASE	
1-92.	MZ283140	SOCKET SELECTER X-I7238 6P	
1-93.	TCT2010D090A	PINCH ROLLER (L) BLK CS-M40R	
1-94.	TCT2010D100A	PINCH ROLLER (R) BLK CS-M40R	

2. HEAD BASE BLOCK

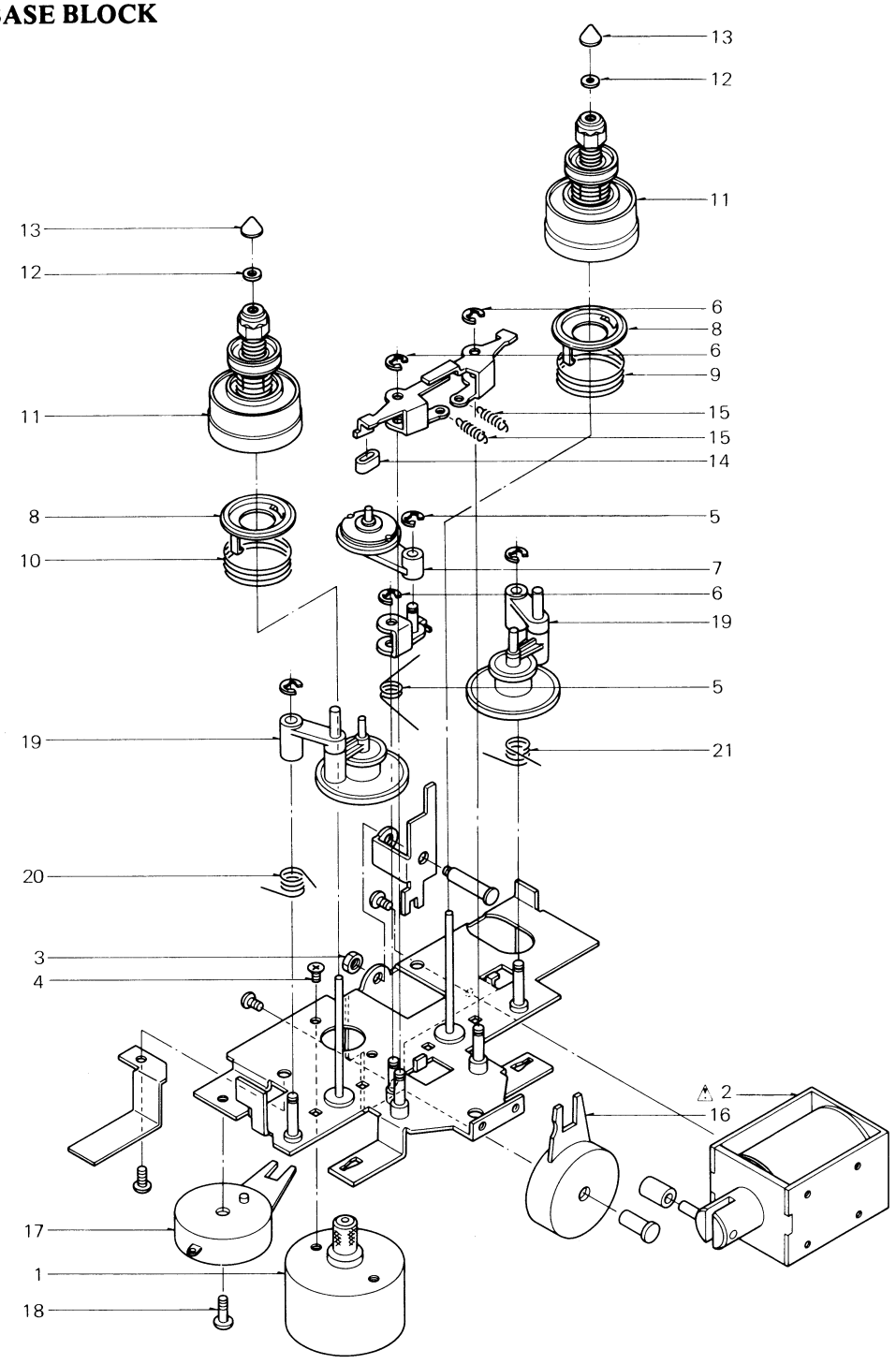


HEAD BASE BLOCK

Ref. No.	Parts No.	Description
2-1x	BHT2022A110A	HEAD BASE BLK CS-F33R
2-2x	ZS201407	PAN23 × 03STL CMT
2-3	ZG369088	ANGLE ADJUST SPRING
2-4	ZG402895	CS ANGLE ADJUST SPRING
2-5	ZS465298	PAN23 × 10STL CMT
2-6	HP311634	HEAD R/P RP-5042-CM-0510 C
2-7	ZS608106	PAN20 × 06STL CMT
2-8	ZG328305	ANGLE SPRING
2-9	ZS592378	PAN26 × 03STL CMT
2-10	HE325859	HEAD E HF213131 C
2-11	ZG313316	ERASE HEAD SPRING (A)
2-12	ZG313874	ERASE HEAD SPRING (B)
2-13	ZW618884	N20STL CMT 1
2-14	HZ313313	TAPE GUIDE
2-15	ZG313314	ADJUST SPRING
2-16	BZT2010A070A	DETECTION TAPE GUIDE BLK CS-M40R
2-17	ZG330078	SP T2-3.2/0.2-9.0 T2-038
2-18	ZG313960	SP PUSH
2-19	ZW550642	PW31 × 0B0 × 050STL CMT
2-20	ZW270088	RING E 190SUP CMT
2-21	MV357208	STEEL BALL D2
2-22	MH314340	HEAD HOLDER
2-23	ZS592378	PAN26 × 03STL CMT
2-24	ZG312946	SP T1-3.2/0.29-16.0 T1-062
2-25x	ZW328682	PW31 × 070 × 050PBR

When ordering parts, please quote Parts Number, Description and Model Number.

3. REEL BASE BLOCK

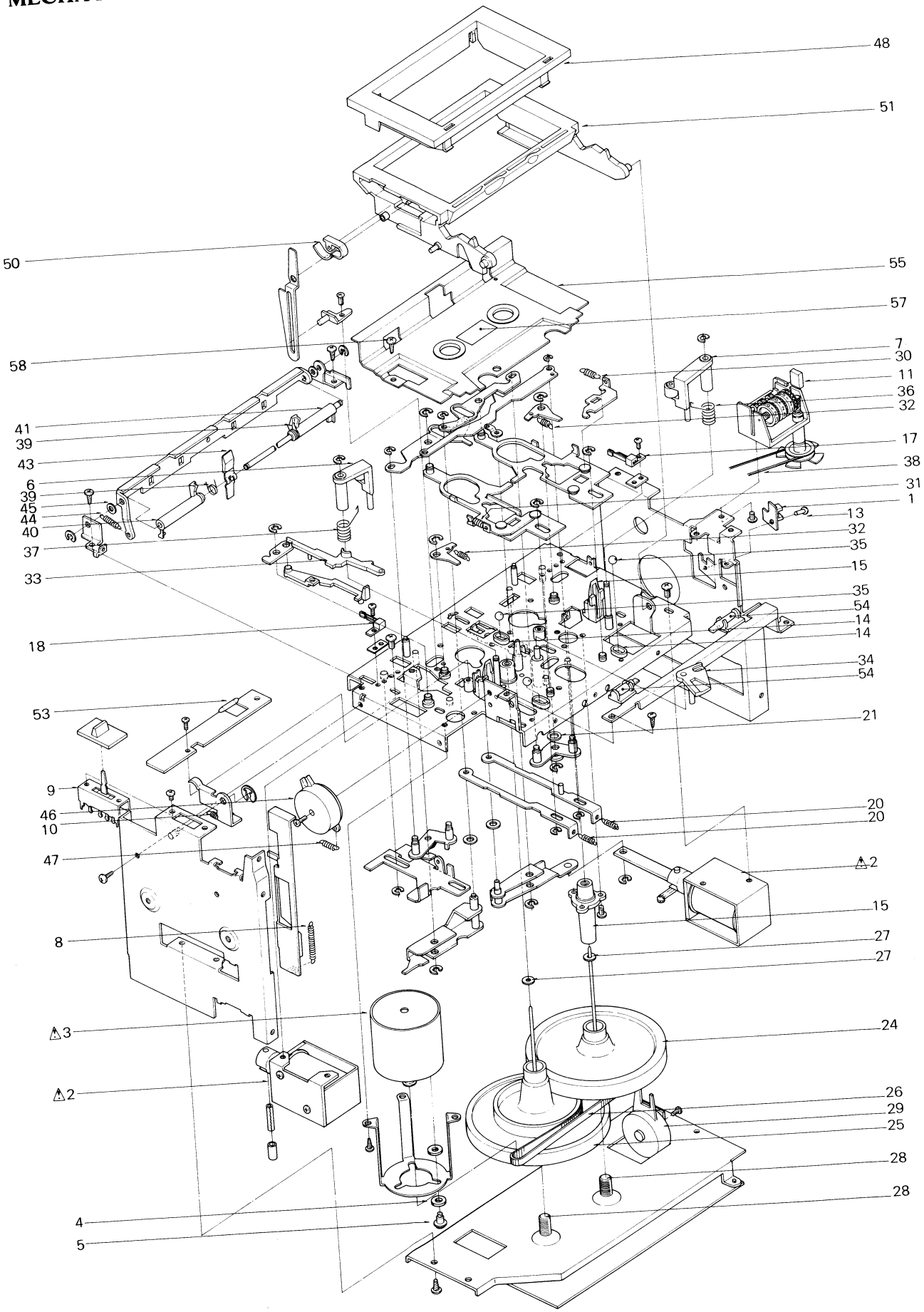


REEL BASE BLOCK

Ref. No.	Parts No.	Description
	REEL MOTOR BLOCK	
3-1	BMT2016A320A	⚠ REEL MOTOR BLK (W/PULLEY) GX-F35
	PLUNGER ASSY	
3-2	EP318645	⚠ SOLENOID 1240PLT 27V
	REEL BASE BLOCK	
3-3	ZW516993	N30STL CMT 1
3-4	ZS430413	CTS26 × 04STL CMT
3-5	ZG314747	SP TORSION IDLER
3-6	ZW270088	RING E 190SUP CMT
3-7	BI312117	REW IDLER ASSY
3-8	TC328365	BT DRUM
3-9	ZG328366	BT SPRING
3-10	ZG330049	SP PUSH BACK TENSION
3-11	BR328424	TAKE-UP REEL TABLE ASSY
3-12	ZS330073	PW21 × 040 × 020
3-13	MT305793	REEL CAP
3-14	MB282104	BRAKE RUBBER
3-15	ZG321534	SP T2-3.2/0.29-12.5 T2-060
3-16	BZT2022A260A	DAMPER (C) ASSY CS-F33R
3-17	BZT2016A330A	DAMPER (B) ASSY GX-F35
3-18	ZS479474	PAN26 × 05STL CMT
3-19	BI312118	TAKE-UP IDLER ASSY
3-20	ZG314876	SP TORSION IDLER CLAMP (A)
3-21	ZG314749	SP TORSION IDLER CLAMP (B)

When ordering parts, please quote Parts Number, Description and Model Number.

4. MECHA FRAME BLOCK



MECHA FRAME BLOCK

Ref. No.	Parts No.	Description
	DETECTION P.C. BOARD BLOCK	
4-1	ET311977	PHOTO SENSOR SPI-201
	PLUNGER BLOCK	
4-2	EP318644	⚠ SOLENOID 1240PLT 27V
	MOTOR BLOCK	
4-3	BMT2022A080A	⚠ MOTOR (PULLEY) BLK CS-F33R
4-4	MB282778	RUBBER BUSH
4-5	ZS321338	MOTOR SCREW
	PINCH ROLLER (L) BLOCK	
4-6	TCT2010D090A	PINCH ROLLER (L) BLK CS-M40R
	PINCH ROLLER (R) BLOCK	
4-7	TCT2010D100A	PINCH ROLLER (R) BLK CS-M40R
	MECHA FRAME BLOCK	
4-8	ZG318204	SP T2-3.2/0.29-16 T2-062
4-9	ES328416	SW SLIDE SSB02385 2-02-03S (SW901)
4-10	ZG312944	SP T1-3.2/0.29-12.5 T1-060
4-11	MC312119	COUNTER MP-390-474
4-12x	MC312120	COUNTER MP-390-475 (BL)
4-13	ZW312121	RV NYL26 × 042 BL
4-14	MS302191	BALL GUIDE
4-15	MV328322	MAIN CASE
4-16	TC314156	HOLDER CASSETTE
4-17	ES201804	SW LEAF BSW-47PBC 01-1 NC (SW902)
4-18	ES201805	SW LEAF BSW-47PC 01-1 NC (SW903)
4-19	ZW438928	PW31 × 048 × 020PBR
4-20	ZG312942	SP T1-3.2/0.29-10.0 T1-058
4-21	ZW259773	PW41 × 070 × 050NYL
4-22	ZW649991	PW41 × 070 × 030PBR
4-23x	ZG314069	SP PLATE HEAD BASE
4-24	MIB601782	FLYWHEEL (A) PART
4-25	MIB601783	FLYWHEEL (B) PART
4-26	MB314317	BELT CAPSTAN
4-27	ZW694798	PW31 × 070 × 020TFL
4-28	ZS302318	HOLD SCREW
4-29	BZT2016A330A	DAMPER (B) ASSY GX-F35
4-30	ZG318083	SP PULL CLAMP
4-31	ZG318083	SP PULL CLAMP
4-32	ZG310531	SP T 1-4.0/0.4-12.5 T1-109
4-33	ML314337	LEVER EJECT CHECK
4-34	MR314339	CAM HEAD CHANGE
4-35	MV269965	BALL 400STL
4-36	ZG310694	PINCH ROLLER RETURN SPRING (A)
4-37	ZG310695	PINCH ROLLER RETURN SPRING (B)
4-38	MB314722	BELT COUNTER
4-39	ZG314464	SP TORSION DETECTOR
4-40	ML314404	LEVER DETECTION (A)
4-41	ML314384	LEVER DETECTION (B)
4-42	ZG314481	SP PLATE CASSETTE HOLDER
4-43	TC328312	CASSETTE HOLDER
4-44	ZG318080	SP PULL EJECT
4-45	ZW438928	PW31 × 048 × 020PBR
4-46	BZT2016A290A	DAMPER (A) ASSY GX-F35
4-47	ZG318228	SPT2-3.2/0.29-14 T2-061
4-48	TC328350	CASSETTE HOLDER
4-49x	TC328351	CASSETTE HOLDER (BL)
4-50	ZG321487	MOLD SPRING
4-51	SZ316010A	LID HOLDER
4-52x	SZ316010B	LID HOLDER (BL)
4-53	EL200096	PL LEAD 3.5V 100MA (IN1)
4-54	EL309960	PL CORD 24.0V 50MA 450/450 (IN902, 903)
4-55	SZ314713A	LID DECORATION PLATE
4-56x	SZ314713B	LID DECORATION PLATE (BL)
4-57	TC317366	REFLECTOR PLATE (B)
4-58	ZS609118	T2PAN30 × 05STL CMT

5. GROUP (1) P.C BOARD (T2022A5100, T2022A5101) BLOCK

Ref. No.	Parts No.	Description
5-1	BAT2022A130A	GROUP (1) PC BLK CS-F33R (U) (INCLUDING PRE AMP PCB AND VR PCB)
5-2	BAT2022A130B	GROUP (1) PC BLK CS-F33R (E) (INCLUDING PRE AMP PCB AND VR PCB)

PRE AMP P.C. BOARD (T2022A5100) BLOCK

5-IC1	EI312179	IC LM1111B
5-IC2	EI311959	IC HA12028
5-TR1, 2	ET603257	TR 2SC1312S G, H
5-TR3, 4	ET328437	TR 2SD1012-V F, G
5-TR5	ET309353	TR 2SC2274 E, F
5-TR6	ET328437	TR 2SD1012-V F, G
5-TR7	ET308954	TR 2SC1844 E, F
5-TR8	ET328868	TR 2SD1012-V G, H
5-TR9	ET200985	TR 2SC2603 F, G
5-TR10	ET603257	TR 2SC1312S G, H
5-TR11 to 13	ET200985	TR 2SC2603 F, G
5-TR14	ET309353	TR 2SC2274 E, F
5-TR15, 16	ET200985	TR 2SC2603 F, G
5-TR17	ET603257	TR 2SC1312S G, H
5-TR18	ET328868	TR2SD1012-V G, H
5-TR19	ET317919	TR 2SC1061 C, D
5-TR20, 21	ET309353	TR 2SC2274 E, F
5-TR22	ET200985	TR 2SC2603 F, G
5-TR23	ET310920	TR 2SC1846 R, S
5-TR24	ET200985	TR 2SC2603 F, G
5-D1	ED308952	D GERMA V 1K34A-LR F07
5-D2to 4	ED560913	D SILICON V 1S2473VE
5-D5, 6	ED308952	D GERMA V 1K34A-LR F07
5-D7	ED318859	D ZENER H HZ9 C2
5-D9	ED306109	D SILICON W03B 100/1.0A
5-D10 to 12	ED560913	D SILICON V 1S2473VE
5-VC1, 2	EC300034	C S-FIX H ECR-CA100H12 9.0-100
5-FR1, 2	ER200595	⚠ R FUSE ERD2FC 1/4W 5R6J
5-FR3	ER318647	⚠ R FUSE ERD2FC 1/4W 4R7J
5-J1	EJ321328	PHONE J HLJ0345-010 2 × 3P
5-J2	EJ316156	PHONE J 3P HLJ0315-020 6.3
5-J3	EJ308986	PIN J 1784P1782 P 4P (U,J,C,A)
5-J3	EJ308985	JACK PLATE DIN, PIN JACK 4P (E,B,S)
5-SW1	EB283072	SW SLIDE SSC22LP 2-02-02N (E,B,S)
5-SW2	ES201314	SW LEVER 00430408 2-04-03S
5-SW3	ES321274	SW LEVER 63349 2-06-03S
5-SW4	ES311975	SW SOLENOID R8150050 27V 10-2W
5-VR1	EV315540	R S-FIX H D8 3P 502
5-VR2, 3	EV315541	R S-FIX H D8 3P503
5-VR4	EV322417	R S-FIX H D8 3P 303
5-VR5	EV315541	R S-FIX H D8 3P 503
5-VR6	EV315542	R S-FIX H D8 3P 103
5-VR7	EV315753	R S-FIX H D8 3P 203
5-RL1	EP318648	RELAY LEAD LAB2NS 2NO 6V
5-VL1	EO321336	COIL VARI 1 FE002 10MH
5-T1	EO311974	COIL OSC1 0322-1034-022 100 KHZ
5-FL1	ER328490	FILTER DB D07-001K 19 KHZ
5-FL2	ER328491	FILTER DB D07-003K 100KHZ
5-FL3, 4	EO315758	COIL TUN 1 100S-431 100KHZ
5-L1	EO330239	COIL FIX 1 FL09H 390UH J
5-C2	EC314997	C STY V SNP CQFS 391K 50DC
5-C3	EC315616	C STY V SNP CQFS 471K 50DC
5-C11	EC319634	C STY V SNP CQFS 561K 50DC
5-C36	EC315616	C STY V SNP CQFS 471K 50DC
5-C38	EC315616	C STY V SNP CQFS 471K 50DC
5-C53	EC318632	C STY V F05 CQF09 101K 50DC
5-C72	EC311880	C PP V F10 PFH 332K 630DC
5-C81	EC328856	C STY V F05 CQF09 331K 50DC
5-3	ZW263946	RV NYL40 × 050

VR. P.C BOARD (T2022A5101) BLOCK

5-VR1	EV329416	VR ROTARY 16P11 × OR 15A503 15A503

6. SYS. CON. P.C BOARD (T2022B5120/T2022B5130) BLOCK

Ref. No.	Parts No.	Description
6-1	BAT2022A120A	SYSCON PC BLK CS-F33R (U) (U,J,E,B,S)
6-2	BAT2022A120B	SYSCON PC BLK CS-F33R (C) (C, A)
6-IC1	EI311710	IC LM6402
6-TR1	ET200985	TR 2SC2603 F, G
6-TR2	ET324134	TR 2SA984K E, F
6-TR3	ET309353	TR 2SC2274 E, F
6-TR4, 5	ET200985	TR 2SC2603 F, G
6-TR6	ET324134	TR 2SA984K E, F
6-TR7	ET309353	TR 2SC2274 E, F
6-TR8, 9	ET200985	TR 2SC2603 F, G
6-TR10	ET324134	TR 2SA984K E, F
6-TR11	ET309353	TR 2SC2274 E, F
6-TR12	ET200985	TR 2SC2603 F, G
6-TR13	ET328437	TR 2SD1012-V F, G
6-TR14	ET328438	TR 2SB808-V F, G
6-TR15	ET328437	TR 2SD1012-V F, G
6-TR16	ET328438	TR 2SB808-V F, G
6-TR17 to 20	ET200985	TR2SC2603 F, G
6-TR21	ET200558	TR2SA1115 E, F
6-TR22 to 24	ET200985	TR 2SC2603 F, G
6-TR25, 26	ET200558	TR 2SA1115 E, F
6-TR27 to 34	ET200985	TR 2SC2603 F, G
6-D1 to 6	ED306109	D SILICON W03B 100/1.0A
6-D9 to 12	ED560913	D SILICON V 1S2473VE
6-D13, 14	ED308952	D GERMA V 1K34A-LR F07
6-D15 to 20	ED560913	D SILICON V 1S2473VE
6-VR1	EV475470	R S-FIX V V8K1-1 3P 103
6-L1	EO669273	COIL FIX 2 FL5R200 18UH
6-X1	EZ328406	OSC CE CSB400A 0.4 MHZ
6-C9	EC306980	C STY V F05 500 221J 50DC
6-C10	EC306438	C STY V F05 500 101J 50DC

7. POWER SUPPLY P.C BOARD (T2022B5160/T2022B5170/T2022B5180/ T2022B5190) BLOCK

Ref. No.	Parts No.	Description
7-1	BAT2022A151A	POWER PC BLK CS-F33R (U)
7-2	BAT2022A160B	POWER PC BLK CS-F33R (J)
7-3	BAT2022A160C	POWER PC BLK CS-F33R (C)
7-4	BAT2022A160D	POWER PC BLK CS-F33R (A)
7-5	BA-T2022A160E	POWER PC BLK CS-F33R (E)
7-6	BAT2022A160F	POWER PC BLK CS-F33R (B,S)
7-TR1	ET307349	⚠ TR 2SD794 P, Q
7-TR2	ET-200985	TR2SC2603 F, G
7-TR3	ET402682	⚠ TR 2SC1061 C
7-TR4	ET200985	TR 2SC2603 F, G
7-TR5	ET307349	⚠ TR 2SD794 P, Q
7-TR6	ET200985	TR 2SC2603 F, G
7-D1, 2	ED330987	⚠ D SILICON RB152 200/1.5A
7-D3	ED329449	D ZENER H HZ18 3
7-D4	ED319167	D ZENER H HZ6 C3
7-J1	EJ310567	⚠ SOCKET INLET 0378PC-GS E 2P (B, S)
7-SW1	ES312234	⚠ SW PUSH SDL-1P 01-1 E (U)
7-SW1	ES312235	⚠ SW PUSH SDL-1P 01-1 J (J)
7-SW1	ES312238	⚠ SW PUSH SDL-1P 01-1 UC (C,A)
7-SW1	ES312234	⚠ SW PUSH SDL-1P 01-1 E (E,B,S)
7-VS1	MZ283140	⚠ SOCKET SELECTER X-17238 6P (U)
7-FR1	ER200972	⚠ R FUSE ERD2FC 1/4W 33ROG
7-C1	EC330308	⚠ C MMY V ECQUF 103M 250AC (U)
7-C1	EC320548	⚠ C CE V F 103Z 250AC (J, A)
7-C1	EC314688	⚠ C CE V FZ 103P 125AC (C)
7-C1	EC330308	⚠ C MMY V ECQUF 103M 250AC (E,B,S)
7-C4	EC316230	C EC V CUT H222M 35DC

8. LED P.C BOARD (T2022D5200) BLOCK

Ref. No.	Parts No.	Description
8-D1	ED322772	D LED SLP-155D-01 RED
8-D2	ED328701	D LED SLP-455D-01 ORG

9. OPERATION (C) P.C BOARD (T2022C5084) BLOCK

Ref. No.	Parts No.	Description
9-J1	EJ324276	DIN J TCS4680-01-111 P 8P

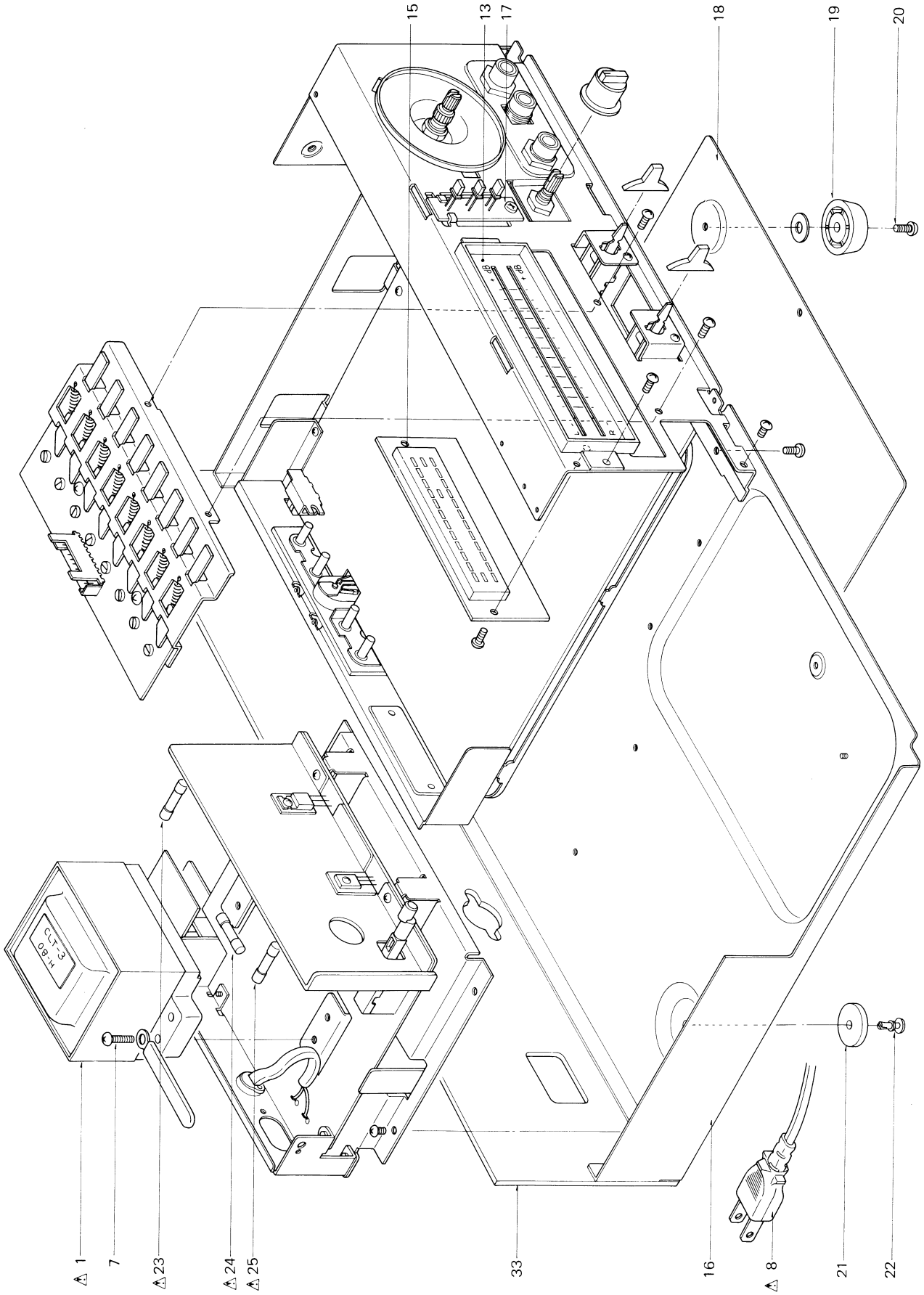
10. OPERATION (A) P.C BOARD (T2022C5081) BLOCK

Ref. No.	Parts No.	Description
10-D1 to 3	ED329006	D LED GL-9NG12 GRN

11. OPERATION (B) P.C. BOARD (T2022C5083) BLOCK

Ref. No.	Parts No.	Description
11-SW4	ES310836	SW ROTARY SRU1023S 1-02-03S

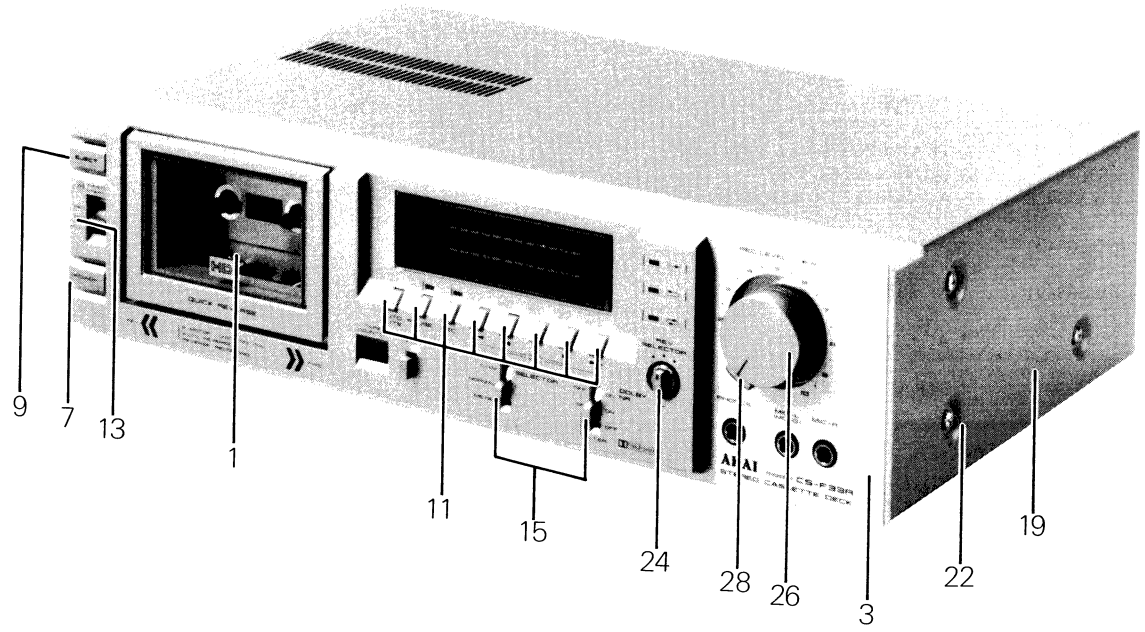
12. ASSEMBLY BLOCK



ASSEMBLY BLOCK

Ref. No.	Parts No.	Description
	POWER BLOCK	
12-1	BT311464	⚠ TRANS POWER CLT-11 (U)
12-2x	BT311470	⚠ TRANS POWER CLT-12 (J)
12-3x	BT311505	⚠ TRANS POWER CLT-15 (C)
12-4x	BT311475	⚠ TRANS POWER CLT-14 (A)
12-5x	BT311488	⚠ TRANS POWER CLT-13 (E)
12-6x	BT311494	⚠ TRANS POWER CLT-16 (B, S)
12-7	ZS201872	ST BID40 × 25STL CMT
12-8	EW306428	⚠ AC CORD 2 CORES KP-205A, VFFUCJ (J)
12-9x	EW306427	⚠ AC CORD 2 CORES KP-211, VFFJ (J)
12-10x	EW305691	⚠ AC CORD 2 CORES KP-8, SPT-1 UC (C,A)
12-11x	EW201796	⚠ AC CORD 2 CORES KP-419C, LTCE-2F E (E)
12-12x	SZ631945	⚠ STRAIN RELIEF SR-4N-4 (U,J,C,A)
	LED METER BLOCK	
12-13	SE316000A	ESCUTCHEON LED METER
12-14x	SE316000B	ESCUTCHEON LED METER (BL)
12-15	EM329497	IND LE LT-1003 GRAPH
	ASSEMBLY BLOCK	
12-16	SP315350	CHASSIS BOTTOM
12-17	ZS329460	GRADUATED SCREW
12-18	SP315391	COVER BOTTOM PLATE
12-19	SA202118	FOOT
12-20	ZS494842	T2BID30 × 08STL CMT PW080
12-21	SA313811	RUBBER FOOT
12-22	ZW231030	RV NYL30 × 045 BL
12-23	EF311839	⚠ FUSE TSC A 250V 1.6A (U,J) (F1)
12-24	EF306949	⚠ FUSE TSC A 250V 1.25A (U,J) (F2)
12-25	EF309389	⚠ FUSE TSC A 250V 0.40A (U,J) (F3)
12-26x	EF308847	⚠ FUSE TSC 125V 1.60A (C,A) (F1)
12-27x	EF309392	⚠ FUSE TSC 125V 1.25A (C,A) (F2)
12-28x	EF308848	⚠ FUSE TSC 125V 0.40A (C,A) (F3)
12-29x	EF601964	⚠ FUSE SEMKO T 250V 1.60A (E,B,S) (F1)
12-30x	EF602550	⚠ FUSE SEMKO T 250V 1.25A (E,B,S) (F2)
12-31x	EF668474	⚠ FUSE SEMKO T 250V 0.40A (E,B,S) (F3)
12-32x	EF602550	⚠ FUSE SEMKO T 250V 1.25A (E,B,S) (F4)
12-33	SP316626B	PANEL REAR BOARD CS-F33R (U)
12-34x	SP316626F	PANEL REAR BOARD CS-F33R (J)
12-35x	SP316626D	PANEL REAR BOARD CS-F33R (C)
12-36x	SP316626E	PANEL REAR BOARD CS-F33R (A)
12-37x	SP316626C	PANEL REAR BOARD CS-F33R (E)
12-38x	SP316626A	PANEL REAR BOARD CS-F33R (B,S)
12-39x	ZS225134	T2PAN30 × 10STL CMT PW080

13. FINAL ASSEMBLY BLOCK



FINAL ASSEMBLY BLOCK

Ref. No.	Parts No.	Description
	LID PANEL BLOCK	
13-1	BDT2022A240A	LID PANEL ASSY CS-F33R
13-2x	BDT2022A240B	LID PANEL ASSY CS-F33R-BL
	FRONT PANEL BLOCK	
13-3	BDT2022A230A	FRONT PANEL BLK CS-F33R (U) (U,J,C,A,PX)
13-4x	BDT2022A230B	FRONT PANEL BLK CS-F33R (J) (E,B,S)
13-5x	BDT2022A230C	FRONT PANEL BLK CS-F33RBL (U) (U,J,C,A)
13-6x	BDT2022A230D	FRONT PANEL BLK CS-F33RBL (E) (E,B,S)
13-7	SK317468A	KNOB PUSH (A)
13-8x	SK317468B	KNOB PUSH (A)-BL
13-9	SK317468C	KNOB PUSH (B)
13-10x	SK317468D	KNOB PUSH (B)-BL
13-11	SK317506A	KNOB OPERATION
13-12x	SK317506B	KNOB OPERATION (BL)

Ref. No.	Parts No.	Description
	FINAL ASSEMBLY BLOCK	
13-13	SK315959A	KNOB SLIDE
13-14x	SK315959B	KNOB SLIDE (BL)
13-15	SK329033	LEVER KNOB (A)
13-16x	SK329034	LEVER KNOB (BL)
13-17x	SE315999A	MASK KNOB
13-18x	SE315999B	MASK KNOB (BL)
13-19	BC328685	UPPER COVER (C)
13-20x	BC328687	UPPER COVER (C-BL) (U,J,C,E,B,S,PX)
13-21x	BC328686	UPPER COVER (D) (A)
13-22	ZS315878	XST BID40 x 08STL NI3
13-23x	ZS310588	XST BID40 x 08STL BNI (A,BL)
13-24	SK325782	KNOB (C)
13-25x	SK325783	KNOB (C-BL)
13-26	SK325785	DOUBLE KNOB (UPPER)
13-27x	SK325786	DOUBLE KNOB (UPPER-BL)
13-28	SK325787	DOUBLE KNOB (LOWER)
13-29x	SK325788	DOUBLE KNOB (LOWER-BL)
13-30x	BC330054	CASE WOOD (PX)
13-31x	SA202118	FOOT (PX)
13-32x	ZW326042	PW35 x 070 x 050STL CMT (PX)
13-33x	ZS414268	T1TRS35 x 10STL CMT (PX)
13-34x	ZW381881	PW41 x 130 x 100STL CMT (PX)
13-35x	ZS330057	ST BID40 x 22STL CMT (PX)
13-36x	ZW305013	RV P0P32 (A)

INDEX

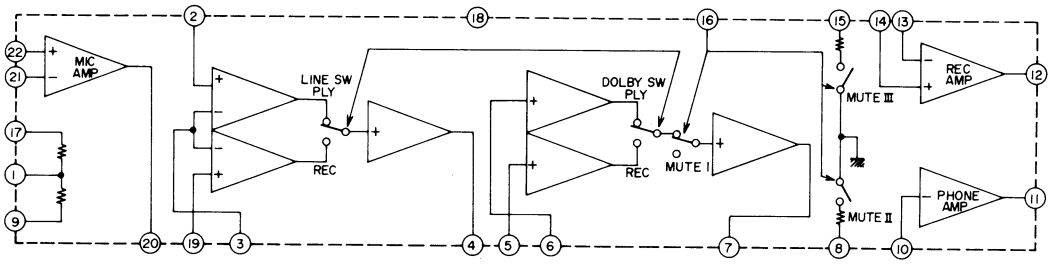
Parts No.	Ref. No. & Symbol No.
BAT2022A120A	6-1
BAT2022A120B	6-2
BAT2022A130A	5-1
BAT2022A130B	5-2
BAT2022A151A	7-1
BAT2022A160B	7-2
BAT2022A160C	7-3
BAT2022A160D	7-4
BAT2022A160E	7-5
BAT2022A160F	7-6
BC328685	13-19
BC328686	13-21x
BC328687	13-20x
BC330054	13-30x
BDT2022A230A	13-3
BDT2022A230B	13-4x
BDT2022A230C	13-5x
BDT2022A230D	13-6x
BDT2022A240A	13-1
BDT2022A240B	13-2x
BHT2022A110A	2-1x
BI312117	3-7
BI312118	3-19
BMT2016A320A	3-1
BMT2022A080A	4-3
BR328424	3-11
BT311464	12-1
BT311470	12-2x
BT311475	12-4x
BT-311488	12-5x
BT311494	12-6x
BT311505	12-3x
BZT2010A070A	2-16
BZT2016A290A	4-46
BZT2016A330A	3-17
BZT2016A330A	4-29
BZT2022A260A	3-16
EC300034	5-VC1,2
EC306438	6-C10
EC306980	6-C9
EC311880	5-C72
EC314688	7-C1
EC314997	5-C2
EC315616	5-C3
EC315616	5-C36
EC315616	5-C38
EC316230	7-C4
EC318632	5-C53
EC319634	5-C11
EC320548	7-C1
EC328856	5-C81
EC330308	7-C1
EC330308	7-C1
ED306109	5-D9
ED306109	6-D1 to 6
ED308952	5-D1
ED308952	5-D5,6
ED308952	6-D13,14
ED318859	5-D7
ED319167	7-D4
ED322772	8-D1
ED328701	8-D2
ED329006	10-D1 to 3
ED329449	7-D3
ED330987	7-D1,2
ED560913	5-D2 to 4
ED560913	5-D10 to 12
ED560913	6-D15 to 20
ED560913	6-D9 to 12
EF306949	12-24
EF308847	12-26x
EF308848	12-28x
EF309389	12-25
EF309392	12-27x
EF311839	12-23
EF601964	12-29x
EF602550	12-30x
EF602550	12-32x
EF668474	12-31x
EI311710	6-IC1
EI311959	5-IC2
EI312179	5-IC1
EJ308985	5-J3
EJ308986	5-J3
EJ310567	7-J1
EJ316156	5-J2
EJ321328	5-J1
EJ324276	9-J1
EL200096	4-53
EL309960	4-54
EM329497	12-15
EO311974	5-T1
EO315758	5-FL3,4
EO321336	5-VL1
EO330239	5-L1
EO669273	6-L1
EP318644	4-2
EP318645	3-2
EP318648	5-RL1
ER200595	5-FR1,2
ER200972	7-FR1
ER318647	5-FR3
ER328490	5-FL1
ER328491	5-FL2
ES201314	5-SW2
ES201804	4-17
ES201805	4-18
ES283072	5-SW1
ES310836	11-SW4
ES311975	5-SW4
ES312234	7-SW1
ES312234	7-SW1
ES312235	7-SW1
ES312238	7-SW1
ES321274	5-SW3
ES328416	4-9
ET200558	6-TR25,26
ET200558	6-TR21
ET200985	5-TR9
ET200985	5-TR11 to 13
ET200985	5-TR15,16
ET200985	5-TR24
ET200985	5-TR22
ET200985	6-TR22 to 24
ET200985	6-TR17 to 20
ET200985	6-TR27 to 34
ET200985	6-TR1
ET200985	6-TR4.5
ET200985	6-TR8,9
ET200985	6-TR12
ET200985	7-TR2
ET200985	7-TR6
ET200985	7-TR4
ET307349	7-TR1
ET307349	7-TR5
ET308954	5-TR7
ET309353	5-TR5
ET309353	5-TR20,21
ET309353	5-TR14
ET309353	6-TR11
ET309353	6-TR3
ET309353	6-TR7
ET310920	5-TR23
ET311977	4-1
ET317919	5-TR19
ET324134	6-TR6
ET324134	6-TR2
ET324134	6-TR10
ET328437	5-TR6
ET328437	5-TR3,4
ET328437	6-TR15
ET328437	6-TR13
ET328438	6-TR16
ET328438	6-TR14
ET328868	5-TR8
ET328868	5-TR18
ET402682	7-TR3
ET603257	5-TR1,2
ET603257	5-TR17
ET603257	5-TR10
EV315540	5-VR1
EV315541	5-VR2,3
EV315541	5-VR5
EV315542	5-VR6
EV315753	5-VR7
EV322417	5-VR4
EV329416	5-VR1
EV475470	6-VR1
EW201796	12-11x
EW305691	12-10x
EW306427	12-9x
EW306428	12-8
EZ328406	6-X1
HE325859	2-10
HP311634	2-6
HZ313313	2-14
MB282104	3-14
MB282778	4-4
MB314317	4-26
MB314722	4-38
MC312119	4-11
MC312120	4-12x
MH314340	2-22
MIB601782	4-24
MIB601783	4-25
ML314337	4-33
ML314384	4-41
ML314404	4-40
MR314339	4-34
MS302191	4-14
MT305793	3-13
MV269965	4-35
MV328322	4-15
MV357208	2-21
MZ283140	7-VS1
SA202118	12-19
SA202118	13-31x
SA313811	12-21
SE-315999A	13-17x
SE315999B	13-18x
SE316000A	12-13
SE316000B	12-14x
SK315959A	13-13
SK315959B	13-14x
SK317468A	13-7
SK317468B	13-8x
SK317468C	13-9
SK317468D	13-10x
SK317506A	13-11
SK317506B	13-12x
SK325782	13-24
SK325783	13-25x
SK325785	13-26
SK325786	13-27x
SK325787	13-28
SK325788	13-29x
SK329033	13-15
SK329034	13-16x
SP315350	12-16
SP315391	12-18
SP316626A	12-38x
SP316626B	12-33
SP316626C	12-37x
SP316626D	12-35x
SP316626E	12-36x
SP316626F	12-34x
SZ314713A	4-55
SZ314713B	4-56x
SZ316010A	4-51
SZ316010B	4-52x
SZ631945	12-12x
TCT2010D090A	4-6
TCT2010D100A	4-7
TC314156	4-16
TC317366	4-57
TC328312	4-43
TC328350	4-48
TC328351	4-49x
TC328365	3-8
ZG310531	4-32
ZG310694	4-36
ZG310695	4-37
ZG312942	4-20
ZG312944	4-10
ZG312946	2-24
ZG313314	2-15
ZG313316	2-11
ZG313874	2-12
ZG313960	2-18
ZG314069	4-23x
ZG314464	4-39
ZG314481	4-42
ZG314747	3-5
ZG314749	3-21
ZG314876	3-20
ZG318080	4-44
ZG318083	4-30
ZG318083	4-31
ZG318204	4-8
ZG318228	4-47
ZG321487	4-50
ZG321534	3-15
ZG328305	2-8
ZG328366	3-9
ZG330049	3-10
ZG330078	2-17
ZG369088	2-3
ZG402895	2-4
ZS201407	2-2x
ZS201872	12-7
ZS225134	12-39x
ZS302318	4-28
ZS310588	13-23x
ZS315878	13-22
ZS321338	4-5
ZS329460	12-17
ZS330057	13-35x
ZS330073	3-12
ZS414268	13-33x
ZS430413	3-4
ZS465298	2-5
ZS479474	3-18
ZS494842	12-20
ZS592378	2-23
ZS592378	2-9
ZS608106	2-7
ZS609118	4-58
ZW231030	12-22
ZW259773	4-21
ZW263946	5-3
ZW270088	2-20
ZW270088	3-6
ZW305013	13-36x
ZW312121	4-13
ZW326042	13-32x
ZW328682	2-25x
ZW381881	13-34x
ZW438928	4-45
ZW438928	4-19
ZW516993	3-3
ZW550642	2-19
ZW618884	2-13
ZW649991	4-22
ZW694798	4-27

SECTION 3

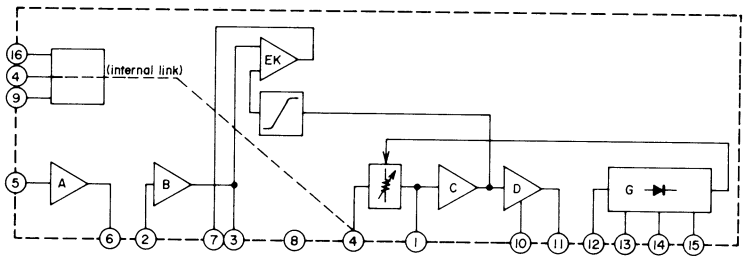
SCHEMATIC DIAGRAM

1. SCHEMATIC DIAGRAM OF ICs
2. CS-F33R No. 1620802A SCHEMATIC DIAGRAM
3. CS-F33R No. 1620803A SCHEMATIC DIAGRAM

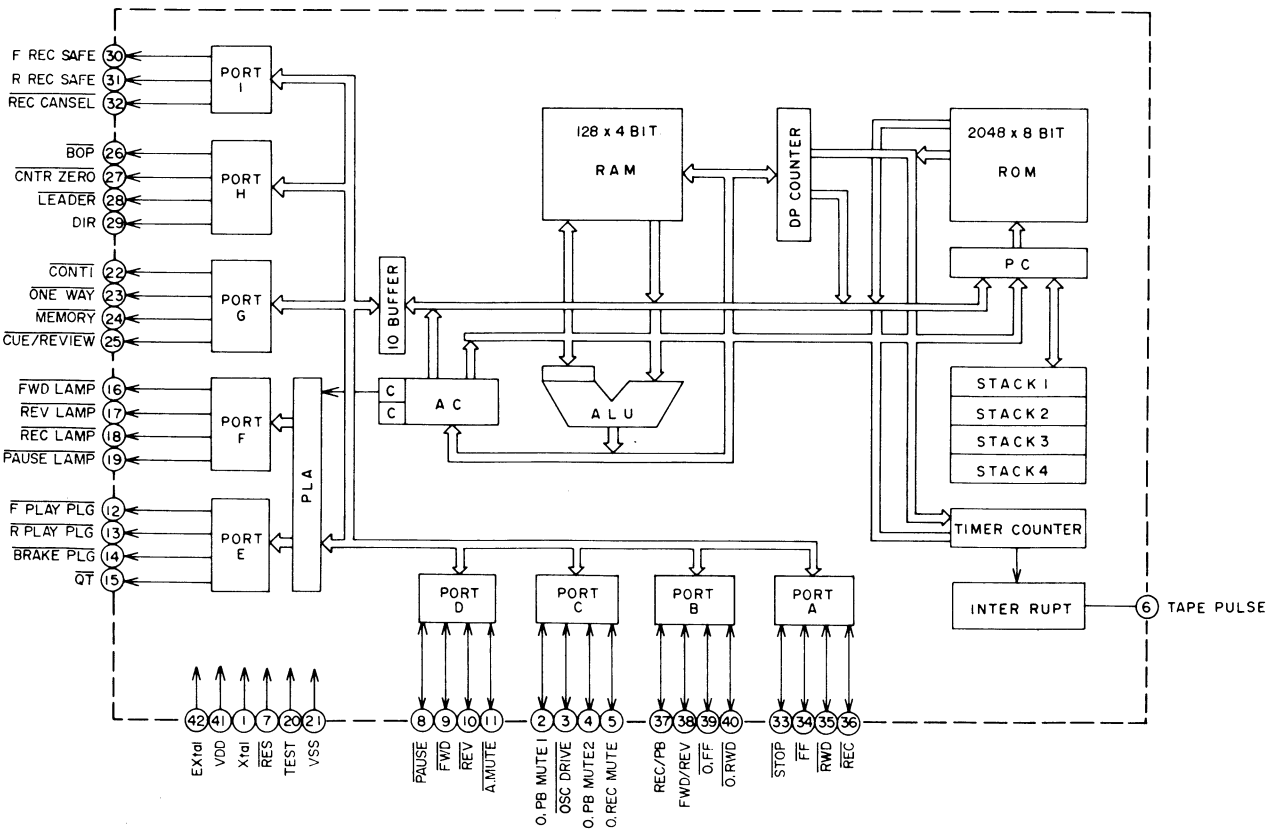
HA12028



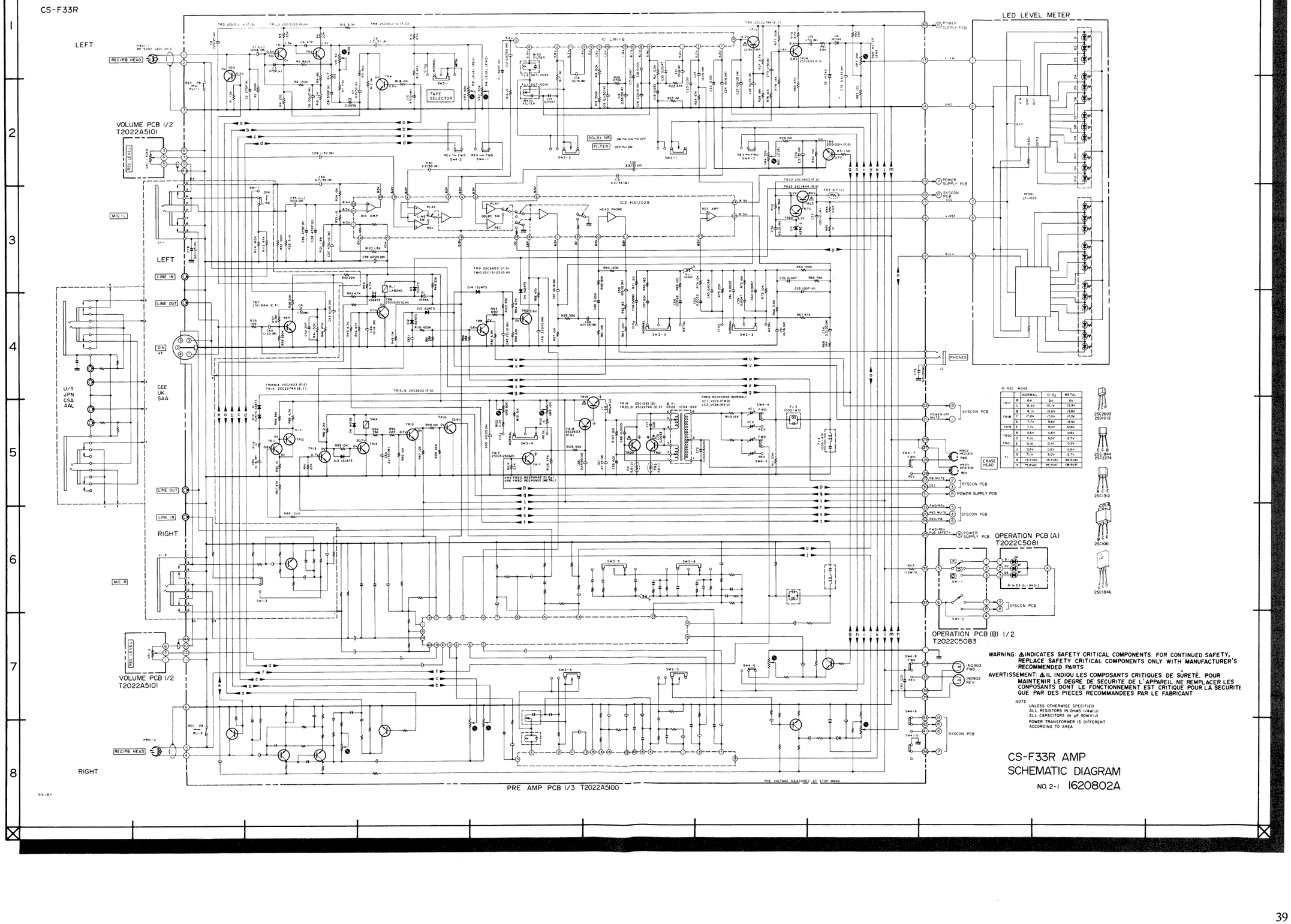
LM1111B



LM6402



CS-F33R



WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQU LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES CONPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

NOTE

UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50W(J)
POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA

CS-F33R AMP SCHEMATIC DIAGRAM

NO. 2-1 1620802A

CS-F33R

CS-F33R POWER & SYSCON SCHEMATIC DIAGRAM

NO. 2-2 1620803A

	U/T JPN	CSA AAL	CEE, SAA UK
F1	1.6A 250V	1.6A 125V	T1.6A
F2	1.25A 250V	1.25A 125V	T1.25A
F3	400mA 250V	400mA 125V	T400mA

2SC2603
2SD1012
2SB808
2SA1115

2SA984
2SC2274

2SD794

2SC1061

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50WV(J)

WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQU LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES CONPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

AKAI PRELIMINARY SERVICE MANUAL

No. 1

MODEL **CS-F33R**

DATE February 1981

I. TECHNICAL DATA

Track System	4 Track 2 Channel Stereo System
Tape	Philips Type Cassette
Tape Speed	4.76 cm/s ± 1.0% (1-7/8 ips. ± 1.0%)
Heads	Erase head x 2 High Density Metallic head for recording/playback x 1
Motors	Electronically speed controlled DC motor for capstan drive x 1 DC motor for reel drive x 1
Wow & Flutter	Less than 0.04% WRMS, 0.12% (DIN 45500)
Tape Winding Time	80 sec. using a C-60 cassette tape
Frequency Response	Normal: 30 to 16,000 Hz ± 3 dB CrO_2: 30 to 16,500 Hz ± 3 dB (-20 VU) 30 to 8,500 Hz ± 3 dB (0 VU) Metal: 30 to 18,000 Hz ± 3 dB (-20 VU) 30 to 12,500 Hz ± 3 dB (0 VU)
Signal to Noise Ratio	Normal: Better than 58 dB CrO_2: Better than 60 dB Metal: Better than 60 dB (measured via tape with peak recording level) Dolby NR switch ON: Improves up to 10 dB above 5 kHz
Harmonic Distortion	Normal: Less than 0.8% CrO_2: Less than 0.7% Metal: Less than 0.7%
Input	MIC: 0.25 mV (input impedance 5.0 kohms) Required microphone impedance: 600 ohms Line: 70 mV (input impedance 47 kohms)
Output	Line: 410 mV at 0 VU Required load impedance: more than 20 kohms Phone: 50 mV/8 ohms at 0 VU
DIN	Input: 2 mV (Input impedance 10 kohms) Output: 410 mV Required load impedance: more than 20 kohms
Power Requirements	100V, 50/60 Hz for Japan 120V, 60 Hz for USA and Canada 220V, 50 Hz for Europe except UK 240V, 50 Hz for UK and Australia 110V/120V/220V/240V, 50/60 Hz internally switchable for other countries
Power Consumption	U/T, JPN, AAL, CAS 20W
Dimensions	440(W) x 118(H) x 270(D) mm (17.3 x 4.6 x 10.6")
Weight	7.5 kg (16.5 lbs)

* For improvement purposes, specifications and design are subject to change without notice.
* "Dolby" and the Double D symbol are trademarks of Dolby Laboratories. (Manufactured under license from Dolby Laboratories).

AKAI ELECTRIC CO., LTD.
12-14, 2-chome, Higashi-Kojiya, Ohta-ku, Tokyo, Japan.
Printed in Japan.

II. VOLTAGE AND CYCLE CONVERSION

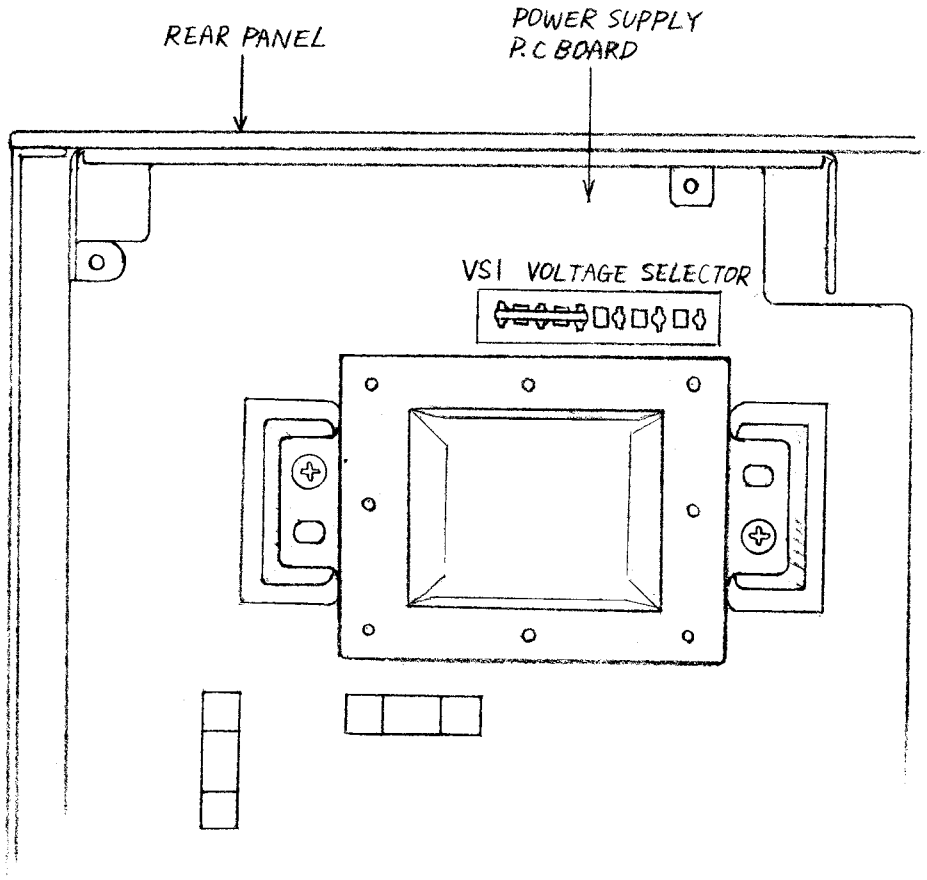


Fig. 2-1 Voltage Conversion (U/T Model Only)

1. VOLTAGE CONVERSION

Models for Canada, Europe, USA, UK, Australia and Japan are not equipped with this facility.

Each machine is preset at the factory according to destination, but some machines can be set to 110V, 120V, 220V or 240V as required.

If voltage change is necessary, this can be accomplished as follows:

1) Disconnect power cord.
2) Loosen holding screws and remove upper cover.
3) Remove short pin plug from present holes and replace in correct holes. Follow the markings explicitly.

2. CYCLE CONVERSION

With DC motor, cycle conversion is not necessary.

III. MECHANICAL ADJUSTMENT

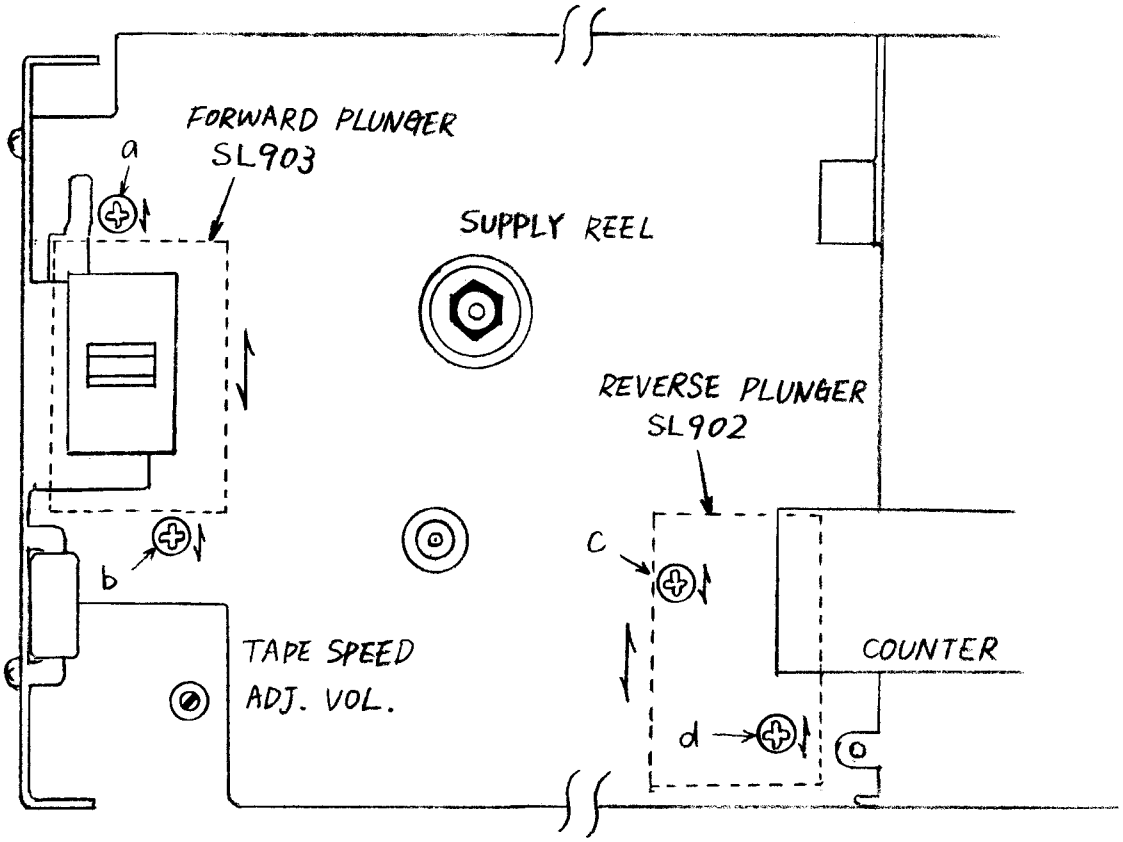


Fig. 3-1

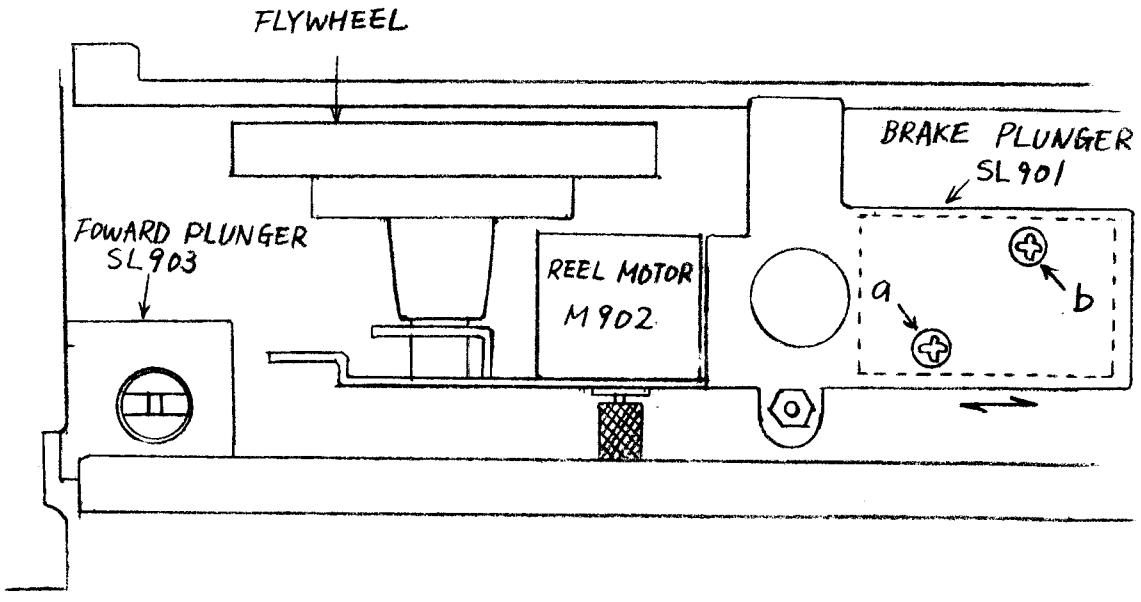


Fig. 3-2

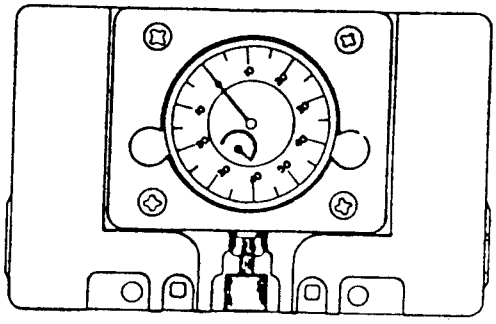


Fig. 3-3 AKAI Head Projection Gauge

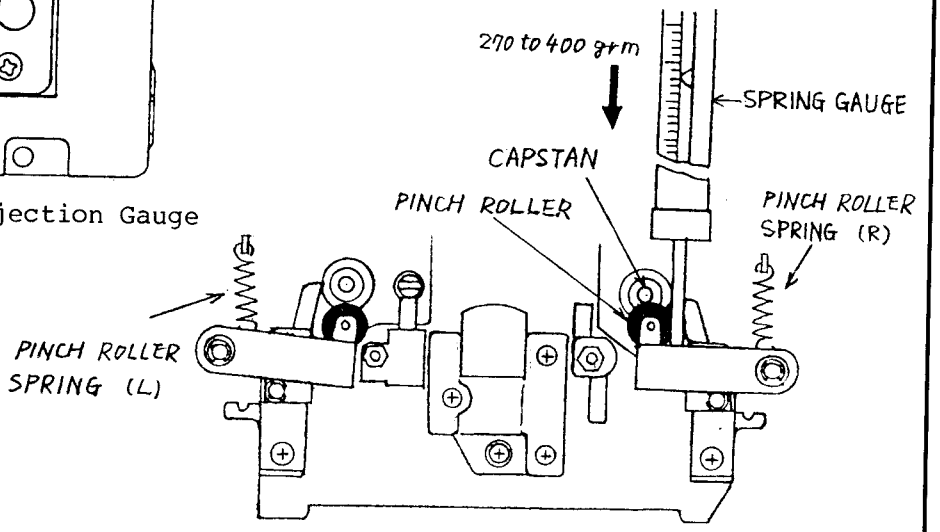


Fig. 3-4

1. PLUNGER POSITION ADJUSTMENT

1) Forward Plunger Adjustment (Refer to Figs. 3-1, 3-2)

Set the AKAI Head Projection Gauge.

Adjust the screws (a) and (b) so that when FWD PAUSE mode is engaged, the Head Projection Gauge indicates to 2.7 mm ± 0.1 mm.

2) Brake Plunger Adjustment (Refer to Figs. 3-2, 3-3)

Set the AKAI Head Projection Gauge.

Adjust the screws (a) and (b) so that when FWD PLAY mode is engaged, the Head Projection Gauge indicates to 3.35 mm ± 0.1 mm.

3) Reverse Plunger Adjustment (Refer to Figs, 3-1, 3-3)

Set the AKAI Head Projection Gauge.

Adjust the screws (c) and (d) so that when REV PAUSE mode is engaged, the Head Projection Gauge indicates to 2.5 mm ± 0.1 mm.

NOTE: This adjustment made is order of numbers.

2. PINCH ROLLER PRESSURE MEASUREMENT (Refer to Fig. 3-4)

Put in FWD PLAY mode. Push pinch roller arm down with the spring gauge push the pinch roller 1 - 2 mm from the capstan and release slowly. Read the spring gauge at the moment the pinch roller touches the capstan and bigins to rotate.

Specified contact pressure measurement of 270 of 400 grm.

If there is no measurement obtained, replace the pinch roller spring.

Do the same for the reverse side.

3. WINDING TORQUE MEASUREMENT IN EACH MODE

Insert cassette torque meter and measure in each mode.

For fast forward and rewind measure at the end of the tape when the tape has stopped running.

Forward, Reverse	:	30 to 55 g-cm
Fast Forward, Rewind	:	75 to 130 g-cm

4. TAPE SPEED ADJUSTMENT (Refer to Fig. 3-1)

Connect a frequency counter to line output terminals.

Playback a 1,000 Hz pre-recorded test tape and adjust tape speed adjustment volume to obtain a tape speed of 995 Hz $\pm$ 5 Hz.

IV. HEAD ADJUSTMENT

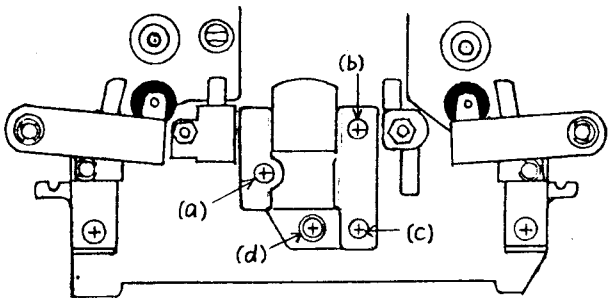


Fig. 4-1

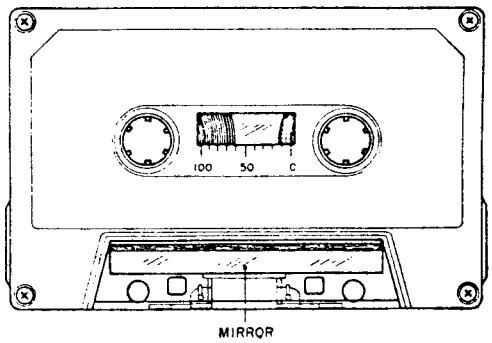


Fig. 4-2

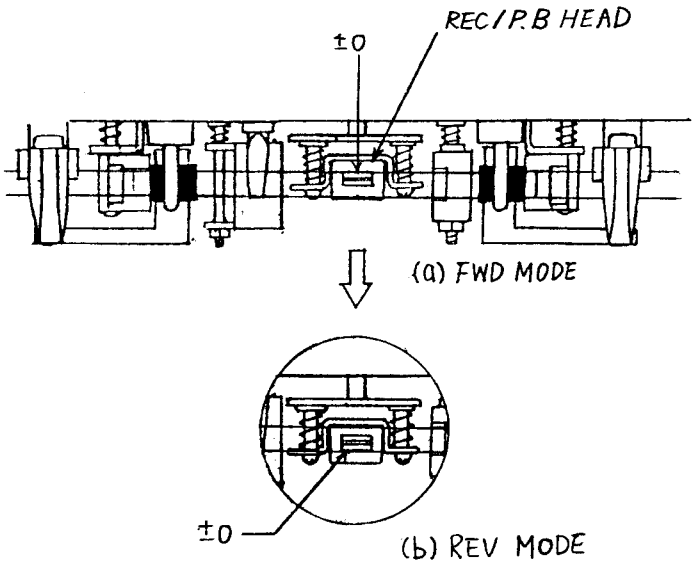


Fig. 4-3

1. REC/PB HEAD HEIGHT ADJUSTMENT (Refer to Figs. 4-1 to 4-3)

   Playback the Head Height Adjustment Tape (4 Track 1,000 Hz) in the Reverse Play Mode and adjust the screws (a) (b) and (c) until the output level of both channels reaches maximum.

   Next put in the Forward Mode and adjust the screw (d) so that output level reaches maximum same as above.

2. REC/PB HEAD AZIMUTH ADJUSTMENT (Refer to Fig. 4-1)

   1) Playback the azimuth adjustment tape (10 kHz) in the REV PLAY mode and adjust screw (a), (b), (c) until the output level of both channels reaches maximum (the AC voltmeter registers maximum).

   2) Put in reverse mode and check that the output level is the same as in the forward mode. If different, adjust with screw (a), (b), (c) until the level is the same in both modes.

   3) After adjustment, check both the head height and the azimuth.

NOTES:
1. Be sure to clean the heads prior to head adjustment.
2. Be careful not to use a magnetized driver or other magnetized tools in the vicinity of the heads.
3. Be sure to demagnetize the heads with a Head Demagnetizer before and after head adjustment.

V. ELECTRICAL ADJUSTMENT

1. QUICK REVERSE SENSITIVITY ADJUSTMENT

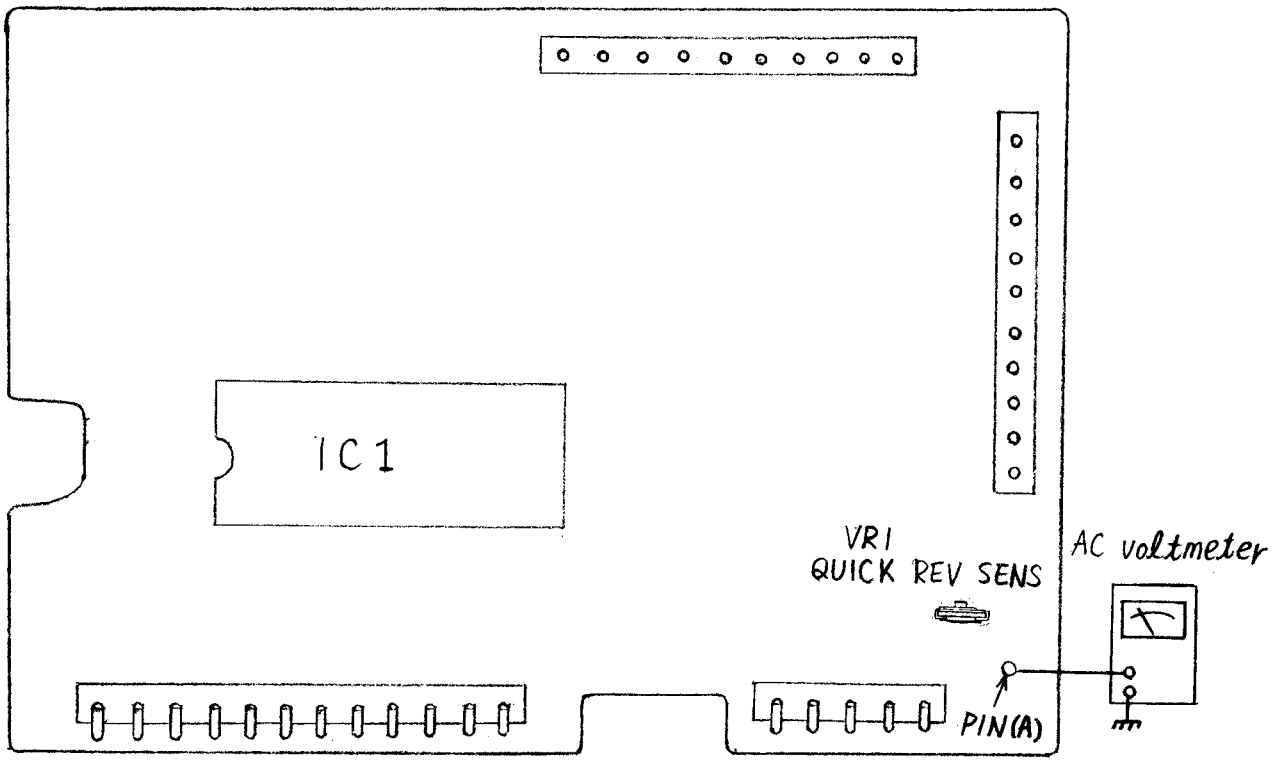


Fig. 5-1 Syscon P.C Board

1) Make a tapeless cassette pack by removing the tape from the white colored test tape.

2) Connect the AC Voltmeter between the PIN (A) and earth.

3) Using the tapeless cassette pack, adjust VR-1 so that the AC Voltmeter indicates 10V ± 0.5V at REV play mode.

NOTE: Use only a clean tapeless cassette pack.

2. AMPLIFIER ADJUSTMENT

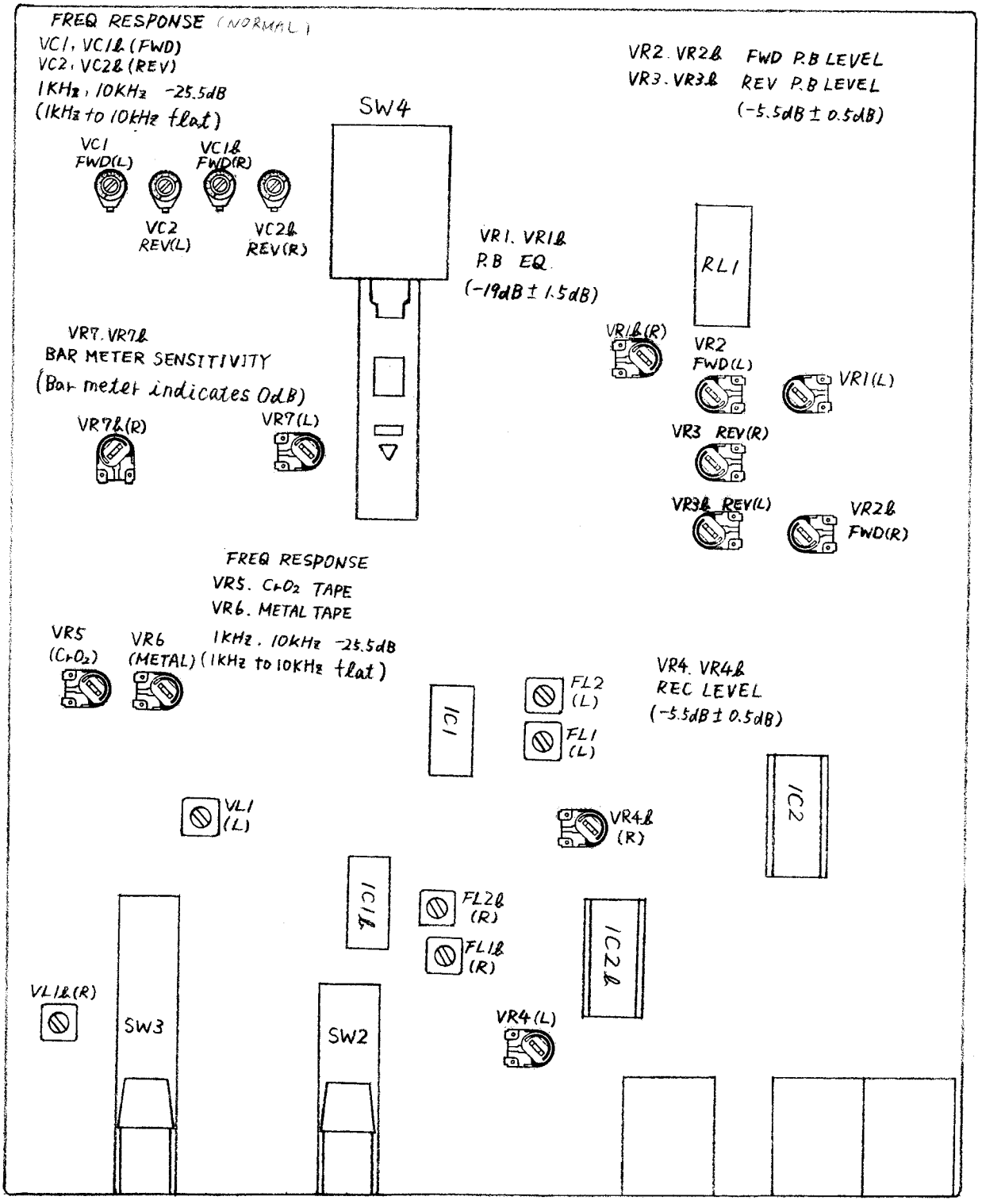


Fig. 5-2 Pre Amp P.C Board T2022A5100

VI. DC RESISTANCE OF VARIOUS COILS

DESCRIPTION	NAME	DC RESISTANCE
REC/PB Head	RP-5402-(AO)-0110	300 ohms ± 20%
Erase Head	HF213131	3.2 ohms
Plunger Solenoid	1240PLT	90 ohms ± 10%

VII. CLASSIFICATION OF VARIOUS P.C BOARDS

P.C BOARD TITLE	P.C BOARD NUMBER	REMARKS
Pre Amp P.C Board	T2022A5100	
Volume P.C Board	T2022A5101	
Syscon P.C Board	T2022B5120	CSA,AAL
Lamp P.C Board	T2022D5140	
Detector P.C Board	T2022D5150	
Power Supply P.C Board	T2022B5160	U/T
Power Supply P.C Board	T2022B5170	JPN
Power Supply P.C Board	T2022B5180	CSA,AAL
Power Supply P.C Board	T2022B5190	CEE,UK,SAA
LED P.C Board	T2022B5200	
Operation P.C Board	T2022C5080	
Remo Con P.C Board	T2022C5084	
Syscon P.C Board	T2022B5130	U/T,JPN,CEE,UK,SAA

CS-F33R
POWER SUPPLY & SYSTEM CONTROL
SCHEMATIC DIAGRAM
NO.001186

AMPLIFIER NO.001187

POWER SUPPLY P.C.BOARD(U) (T2022B5160)

SYSTEM CONTROL P.C.BOARD (U/T,JPN,CEE,BEAB,SAA)(T2022B5130) (CSA,AAL)(T2022B5120)

LED P.C.BOARD(A) (T2022D5200)

OPERATION P.C.BOARD (T2022C5080)

LAMP P.C.BOARD (T2022D5140)

PRE-AMP P.C.BOARD

REMOTE CONTROL P.C.BOARD(C) (T2022C5084)

DETECTOR P.C.BOARD (T2022D5150)

FILTER P.C.BOARD (CL-5026)

(JPN)POWER SUPPLY P.C.BOARD(J)(T2022B5170)
(CSA,AAL)POWER SUPPLY P.C.BOARD (C,A)(T2022B5180)
(CEE)POWER SUPPLY P.C.BOARD(E)(T2022B5190)

POWER SUPPLY P.C.BOARD (B,S) (T2022B5190)

※	U/T JPN.	CSA AAL	CEE SAA BEAB
F1	1.6A 250v	1.6A 125v	T1.6A
F2	1.25A 250v	1.25A 125v	T1.25A
F3	400mA 250v	400mA 125v	T400mA
F4			T1.25A

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50WV(J)

WARNING: △INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

LEFT

RIGHT

H901-1

RP-5042-(AO)-0110

H901-2

VOLUME P.C.BOARD 1/2 (T2022A5101)

VOLUME P.C.BOARD 1/2 (T2022A5101)

REC LEVEL

VR1-1 50KA

VR1-2

MIC-L

MIC-R

J1-1

J1-2

LINE IN

LINE OUT

J3-1

J3-2

J3-3

J3-4

J3-5

DIN

U/T JPN CSA AAL

CEE BEAB SAA

RL1-1

RL1-2

SW1 DIN LINE

SW1-1

SW1-2

TAPE SELECTOR

SW3-1 CrO2 NORMAL METAL

SW4-1 FWD REV

SW4-2 PB LEVEL (FWD) PB LEVEL (REV)

SW2-2 FILTER

SW2-1 DOLBY NR

SW4-3 FWD REV REC LEVEL

SW3-2 CrO2

SW3-3 CrO2

SW3-4

SW3-5

SW3-6

SW3-7

SW4-4 FWD REV VC1 VC2

SW4-5 FREQ RESPONSE (LOBEHAU) VC1. VC2 (FWD) VC2. VC2 (REV)

SW4-6

SW4-7 FWD REV

SW4-8 FWD REV

SW4-9

SW4-10

SW2-4

SW2-3

IC1 LM1111B

BIAS FILTER

FL2 D07-003K

FL1 D07-001K

19KHz FILTER

IC2 HA12028

PLAY

LINE SW

REC

DOLBY SW

MIC AMP

HEAD PHONE

REC AMP

PLAY

REC

TR1 2 2SC1312S(G,H)

TR3 2SD1012-V(F,G)

TR4 2SD1012-V(F,G)

TR5 2SC2274K(E,F)

TR6 2SD1012-V(F,G)

TR7 2SC1844(E,F)

TR8 2SD1012-V(G,H)

TR9 2SC2603(F,G)

TR10 2SC1312S(G,H)

TR11 12 13 2SC2603(F,G)

TR14 2SC2274K(E,F)

TR15 16 2SC2603(F,G)

TR17 2SC1312S(G,H)

TR18 2SC2603(F,G)

TR19 2SC1061(D)

TR20 21 2SC2274K(E,F)

TR22 2SC2603(F,G)

TR23 2SC1846(R,S)

TR24 2SC2603(F,G)

T1 0322-1034-022

D1 1S1473

D2 1S2473

D3 1S2473

D4 1S2473

D5 1K34A

D6 1K34A

D7 HZ6C-2

D10 1S2473

D11 1S2473

VL1 10mH

FL3 1005-A31

FL4 1005-A31

VRS. FREQ RESPOUSE (GOOD)

VR6. FREQ RESPOUSE (MEDIUM)

POWER SUPPLY (+18v)

POWER SUPPLY (+12v)

SYS-CON (7.4v)

POWER SUPPLY (5v)

SYS-CON (PB MUTE)

SYS-CON (OSC)

POWER SUPPLY (27v)

SYS-CON (F/R)

SYS-CON (REC MUTE)

SYS-CON (R/P)

POWER SUPPLY (F/R PLG SAFETY)

L-CH

GND

V REF

VCC

R-CH

PHONES

J2

LED LEVEL METER

IN901 LT-1003

H902 HF213131

H903 HF213131

IN903 FWD

IN902 REV

OPERATION P.C.BOARD(A) (T2022C5081)

OPERATION P.C.BOARD(B) (T2022C5083)

REV SELECTOR

SYS-CON

2SC2603 2SD1012

2SC1844 2SC2274

2SC1846

2SC373/2

2SC1061

PRE-AMP P.C.BOARD (T2022A5100)

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS.
FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50WV(J)
POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA

POWER SUPPLY & SYSTEM CONTROL NO.001186

CS-F33R
AMPLIFIER
SCHEMATIC DIAGRAM
NO.001187